The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 135, NO. 2 — CHICAGO, ILLINOIS — SEPTEMBER 13, 1947

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THE PRESTIGE OF OPHTHALMOLOGY

Chairman's Address

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To those who devote their professional lives to ophthalmology it is a most pleasant, exciting, interesting and absorbing field. The rewards in the happiness, gratitude and satisfaction of patients more than repay the ophthalmologists' efforts. From a humanitarian point of view it is one of the most valuable of all specialties. It is also one of the most important branches of medicine, affecting the economic welfare of the people. Those engaged in it are jealous of its prestige, but have been too busy, too self-contained, too interested in their own work and the good that they are doing to bother much about the prestige of ophthalmology. This is the correct attitude; it is only correct, however, if it is not carried too far, and it is now time to halt a bit and look around. The opportunity to present some thoughts on this subject to fellow members of the Section on this great occasion is too good to pass by.

I had the experience during the war of meeting as comrades and on common ground many experts in other fields of medicine. The experience was invaluable from many points of view, but it awakened me to the fact that ophthalmology was held in pretty low esteem by my colleagues, at least until the battle casualties began to roll in; then the ophthalmic surgeon came into his own. Those who served with various units of the Armed Forces will, I am sure, bear me ort in this contention, for they must have endured, at least early in the war and perhaps all through their experiences, the feeling that ophthalmology was relegated to an extremely minor position in the overall set-up. In fact, it was not unusual for the commanding officer or the chief of surgical service to designate any unassigned officer as the eye physician or to tell the straight ear, nose and throat officer to do the eye work or, what is still worse—and it happened fortunately on but a few occasions—to turn over all the eye work to an optometrist. To be entirely fair, there were perhaps extenuating circumstances under conditions of stress to be found in the local situation in some places.

At the meeting of the British and American Army Consultants, which was held in Paris Oct. 14, 15 and 16, 1944, I was allowed but five minutes in which to present the problems of war ophthalmology and that at the very end of the meeting. I had listened for several days to a discussion of general surgical problems, many hours of which had been devoted to the relative value of the Tobruk versus the Spica splint for fractured femur. Finally, my turn came. Somewhat exasperated, I said: "Many of the hospital commanders and chiefs of surgery are not particularly interested in ophthalmology, unless they happen themselves to have an eye disease or injury, and then they want the best care possible." This statement got a laugh, but it also got the support of the distinguished guest of honor here today, Brigadier Sir Stewart Duke-Elder, then chief consultant in ophthalmology to the British Army. Sir Stewart said: "There is one point I wish to stress very emphatically. It reverts to the question of priorities again. At the beginning of the discussion today, the surgeons decided that a suitable definition for surgical priorities could be defined as 'life-and-limb-saving.' It may be argued whether it is better to die or be blinded, but I should think that there are few, myself included, who would not prefer to lose a limb then their vision. I would therefore suggest that for 'life-and-limb-saving,' then, should be substituted 'life-vision-and-limb-saving.' It should be remembered that eye casualties comprise some 4 per cent of the total casualties of war, and I think there is a tendency for the general surgeons who control the policy of surgery in the field, to forget this, or alternatively, to treat it as a side issue." That was a rather potent statement, with good results, for from then on ophthalmology was not quite the side issue that it had been.

It was not until two months before D-day that a chief consultant in ophthalmology to the surgeon general was appointed. Before that time many ophthalmic problems had been crying for solution, many costly mistakes had been made in loss of valuable time and in supplies and equipment, as well as in misplaced personnel. After that things were better, but it was almost too late. The Navy never did have a chief consultant or advisor in ophthalmology. This was because the planning policies were in the hands of the general surgeons, who had no interest or special knowledge in ophthalmology and its peculiar functions.

This feeling of my medical and surgical colleagues in the services that ophthalmology was a minor specialty, a side issue and of relatively small importance is one that is met with today in civilian life. Along with this indifference and in some cases ignorance of fellow physicians is the confusion in the public mind on what ophthalmology is and how it differs from optometry. I won't say that the prestige of this specialty is lowered particularly as a result, but at least it is actively shared

Read before the Section on Ophthalmology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

by a nonmedical group, with the result that all who work in this field are, in the minds of the uninformed, "eye doctors." This would be laughable if it were not so serious to the patients, in consideration of the time spent and in the quality of the differences in the training of the ophthalmologist and the optometrist. This specialty is not entirely alone in the sharing and diluting of its hard-won prestige, for in the mind of the public the psychiatrist has as his rival the pseudopsychologist or lay psychoanalyst; the orthopedic surgeon, his bone setter, osteopath or chiropractor; the physician, his naturopath and so on. This fringe, some of it lunatic, of nonmedical practitioners has always been attached to the physician's robe and has had some soiling effect on it. But what should and does concern the ophthalmologist most is the ignorance about his specialty observed in fellow physicians and the indifference they often show to his special knowledge and work. Some of the factors that I believe are responsible for this decrease in ophthalmologic influence are (1) exclusiveness and withdrawal from the general medical field; (2) exclusive and hidden work which is obscure, that is to the average general physician, and performed in special eye hospitals and pathologic laboratories; (3) the eye, ear, nose and throat specialist, who is poorly qualified in ophthalmology; (4) the optometrist; (5) rebates; (6) the gradual loss of part of the territory or field of endeavor of the ophthalmologist and of his responsibilities to the neurologist, neurosurgeon and plastic surgeon; (7) little or no representation in the controlling membership or councils of the major medical and surgical organizations (this is directly related to the first factor), and (8) spectacular publicity.

Reasons for decrease in ophthalmologic influence:

1. Exclusiveness and withdrawal from the general medical field: There is no doubt that this is true and has been evolved in direct proportion to the technical growth of the specialty. The general medical interests of the ophthalmologist have become narrower as time has gone on. Ophthalmic problems today require more skill, more diagnostic acumen, more instrumentation than ever before. If one will but compare the office practice of ophthalmology today—necessitating as it does refraction, perimetry, slit lamp biomicroscopy, tonometry, muscle studies, ophthalmoneurologic investigation, laboratory tests, ophthalmoscopy, the maintenance of careful records and so on—with the practice of a busy oculist of forty years ago, who was able to see twice the number of patients in half the time, it can readily be seen how much more complicated, and rightly so, this work is today. This sort of thing saps one's energies over a period of time, until it is no longer possible to see the forest because of the trees. Such is the demand for service from all sides, that even the new exresident soon finds himself taxed with ophthalmic work to the fullest extent of his time and ability. He thus tends to lose interest in the broader aspects of his profession as a physician and to lose touch with those colleagues, who have so much to teach that will benefit his patients, and to whom he could teach so much that would benefit theirs. The solution lies in a realization of the rut that one is in and in the devotion of more time and effort as an individual to the wide general medical interests of a true physician. The ophthalmologist must sell himself and his special skills to his general medical and surgical colleagues, not for any ulterior economic purpose but for the welfare of the medical profession as a whole.

2. Work in special eye hospitals and the laboratories of eye pathology: Special eye hospitals are not as frequently found today as they used to be. I have in mind particularly the small private eye hospitals and clinics that were relatively common in the past. The modern trend, which is wise, is to develop a satisfactory eye department in a general hospital or a special building in a center. More of this needs to be done, for the ophthalmologist must rub elbows with other physicians in his daily work and not hide his light under a bushel or fail to see theirs.

The study of ophthalmic pathology of its very nature is an ultra specialty. It requires special equipment, technics and knowledge. The average general medical pathologic laboratory is entirely unsuitable to turn out the exceedingly fine work that is needed in this specialty. Therefore the ophthalmic departments in medical schools and hospitals have been forced to develop their own laboratories. This need not be so. Ophthalmic pathologic procedures should be a part of the work of the general medical laboratory, and it is up to the ophthalmologist to educate the general pathologist to this way of thinking if he will but listen. He should, for it is to his advantage as well to have all of this work together.

3. The Eye, Ear, Nose and Throat Specialist: Eighty per cent of the members of the Academy of Ophthalmology and Otolaryngology have an eye, ear, nose and throat practice. This group, therefore, is far from being extinct. There is an obvious need for their services, especially in the smaller communities. However, it is sad to relate that many of them are better qualified by training and board examination to do ear, nose and throat work. They are satisfied for the most part with certification by the Ear, Nose and Throat Board, which gives the membership in the Academy. From then on further training in ophthalmology is casual and secondary. Few seek additional certification by the Board of Ophthalmology. These statements are supported by war experience and the records of the American Board of Ophthalmology. The solution lies in insisting that these men have a satisfactory training or at least opportunities for such training in the field of ophthalmology. There is no more certain way to lose ground with one's colleagues than through poor quality of work.

4. The optometrist: Legally entitled to practice his technic, the optometrist is here whether one likes it or not. There is a fact that all must face: he is also protected by the legal definition of the practice of optometry in each state against the failure to recognize a pathologic process with the eye. In spite of this legal protection of nonresponsibility he claims this power of diagnosis publicly and makes much of his competence to recognize ocular disease. It is well known from daily experience that such competence is not the case. Many examples of this morally criminal though entirely legal lack of responsibility on the part of the optometrist can be demonstrated by every ophthalmologist. The optometrists as a whole have done everything in their

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power by advertisements of the most blatant type, which assail the ear and eye night and day, to confuse and mislead the public into believing that they are eye physicians or by calling themselves eyesight specialists to claim to practice a profession having to do with all ophthalmic care. This has been going on for a long time. Therefore it is not surprising that the public should not know the difference between an ophthalmologist or an oculist, and an optometrist. What is surprising and shocking, however, is that junior and senior medical students and even physicians often do not know the difference. In fact cases are known in which a physician has referred a patient to an optometrist for an ophthalmoscopic consultation and opinion. I repeat that the ophthalmologist is at fault for the existence of such ignorance among his medical colleagues.

One must face the fact, too, that there are simply not enough ophthalmologists to go around. Eighty per cent of the persons seeking an ocular examination go to the optometrist. Of these 80 per cent it is presumed on good grounds that 30 per cent have some ocular disease. How many of these cases are missed by the optometrist it is impossible to say, although the figure must be impressive. But even if every one of these persons had sought out the ophthalmologist, the work could never have been accomplished by the small number of such specialists available. It is not a question of economic rivalry, therefore, that has led to the bitterness between the two groups, for each group has more work to do than can be done properly. Rather, it is the effort of a nonmedical group to enter into a professional field that disturbs those who are also physicians.

How then is the average person, the common man, to be protected against losing his sight as the result of nonrecognition of his ocular or general disease? I see no solution to this problem in the immediate future.

For the long run, however, I should like to consider the following suggestions: First, the ophthalmologist must take a more active part in instructing this nonmedical group in the recognition of ocular pathologic processes. This does not imply that the optometrist must be taught definite diagnosis, for I believe this to be impossible because of his lack of medical training. But I do believe that he can be taught to recognize that something is wrong and, what is more important, that he can be impressed with the moral necessity of seeing that such a patient consults an ophthalmologist, which he has been loath or reluctant to do up to the present. The teaching of the optometrist by the physician is a practice that has gone against the grain, but it is a sworn duty to protect the patient, and this responsibility must be carried out. There are some who say, "Ignore the optometrist entirely, but educate the people to seek proper eye care." This should be done too, of course, but the members of the medical profession have hitherto been reluctant to go deeply into this matter. The dear public has to have its head hammered at repeatedly in order to get any message through, no matter how right or beneficial the message may be; and the lower class of optometrists, the more numerous and noisy group, have succeeded in hammering in their message to the detriment of the people. The first thing, therefore, is to curb these unscrupulous optometric advertisers, the neon sign, jewelry store and department store artists.

This leads to the second suggestion. It is to support that small but intelligent group among the optometrists themselves, who are working and striving to elevate the ethics, standards of education and sense of duty to public welfare among their own colleagues. The blatant newspaper, radio and neon sign advertisers are repugnant to them as well as to the ophthalmologists. This group is valiant and deserves active support, for in no other way can the advertiser be driven from the field of refraction care of the public. The medical group cannot possibly accomplish this; its members have neither the time nor the legislative talents nor even the interest to attempt this by themselves. But each as an individual must seek the aid of the special ophthalmic societies and particularly the major medical societies, such as the American Medical Association, to take part in this campaign. It is a matter of expediency, for the ophthalmologist agrees with the more enlightened optometrist that the advertisers must go. Third, physicians must seek all means and measures at their command to have the title doctor reserved for doctors of medicine; the term eye doctor or eyesight specialist must be legally banned to the optometrist. This has already been done in some states. Should the optometrist succeed in the future in persuading some reputable university to put a school of optometry into its faculty and curriculum (which, incidentally, has not occurred since 1925) physicians must see to it that the degree of doctor is not granted to the graduates in optometry.

The public, too, must be educated, if at all possible, which I doubt, to know the difference between the doctor of medicine and the so-called doctor of optometry. Finally: Legislation must be sought that will hold the optometrist legally responsible for his diagnostic errors and see that he is subject to the same court of malpractice.

It has been demonstrated in the Army and Navy that optometrists and ophthalmologists can work side by side peacefully for their mutual advantage and to the advantage of the patient as well. It is therefore not inconceivable that this teamwork can be carried over into civilian life and it is to this end that all must work. For, I repeat, optometry is here and legally entitled to stay, and it is the function of medicine to absorb it, if man is to be protected and taken care of.

5. Rebates: Nothing can be said in extenuation of the widespread evil of optical rebates. It cannot be defended on ethical, moral or even economic grounds. It is a blot on ophthalmologists as professional men. They must repudiate the practice with all their strength. It is a cancer to their prestige. They have lowered themselves in the eyes of their medical brethren and in those of the persons who are aware of it. It cannot be hidden by subterfuge, and if they do try to do so, they are playing directly into the hands of the commercial firms and optometrists to the detriment of themselves and to the harm of their patients. The solution of this evil is to have none of it but to charge fees that are right and proper for the great service which is rendered, and to let the world know that rebates are not accepted.

6. The gradual loss of part of the territory or field of endeavor of the ophthalmologist and of his responsibilities to the neurologist, neurosurgeon and plastic surgeon: Here again it is his own fault, for in these

fields ophthalmologists have not made good as a group, and it must be remembered that there is no monopoly on the experienced use of the ophthalmoscope and perimeter or the neurologic examination of the eyes. The perimetric examination is slipshod and haphazard, the knowledge of neuro-ophthalmology is casual and scanty and the practice of it is worse; the ocular specialist has even failed to convince the neurosurgeon that he can excel him in ophthalmoscopic examinations.

As a group the specialist in this field has backed away from ophthalmic plastic surgery and has done little to train residents. The solution lies in more and better training in order to offer convincing proof that the ophthalmologist knows more about neuro-ophthalmology than does the neurologist and that he can do better plastic repairs of the lids and adnexa than can the plastic surgeon.

7. Little ophthalmic representation in the general medical and surgical groups: This lack of representation is a sad truth. Ophthalmology has gradually been frozen out, so that if it is considered by the councils at all, it is apt to be as an afterthought. The cause of this lies within and is connected with the aloofness of this specialty from general medicine and surgery. The cure is to take more active part in the affairs of general medical practice.

8. Spectacular publicity: Recently ophthalmology has experience a spate of spectacular and notorious publicity that in the end is harmful to its prestige. It almost seems as if there is an epidemic of publicity. Lord Horder of Great Britain, the great physician, has said, "One cannot have prestige without a certain amount of publicity, but you can have a large amount of publicity with very little prestige." It is the duty of ophthalmologists as individuals and as a group to control publicity that is spectacular and harmful, first to the patients and in the end to the physicians. The leaders in particular must be ever watchful against this pernicious seduction, for if they fall for the siren, who shall blame the younger man in whom lies all of the hope and faith and confidence for the future of ophthalmology? It takes a stern hand and even disciplinary action to stamp out. It can be controlled best only by the individual, for it is in his power to refuse press interviews that violate the confidence of the patient or to refuse medical care to the patient who does not conform to his wishes in regard to publicity or to discharge the employee who gives back-door information to the press. There can be only one guiding question asked of proposed publicity, "Is it harmful to the general good, to the individual patient or to ophthalmology?" The ophthalmologist must never permit himself to be intruded into the picture.

Recently, too, there has been medical publicity that is tinged with a political or subversive taint, the promotion of a discovery not for its merits but because of a national ideology. This is dangerous not only because the discovery may be found not to have merit and publicity may thus lead to ridicule of the responsible group or agent, but more seriously because medicine and medical discoveries must be universal and free of any tie to political propaganda. In other words, a discovery must be tested on its own merits and neither supported nor condemned because it bears an ideologic tag. One must fight against such inroads into the freedom of thought to the utmost of one's strength.

Ophthalmology deserves the love and respect of those who practice it. Devotion to this specialty is repaid magnificently and in many ways. One must be ever jealous to protect its honor, nobility of purpose and prestige.

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POLIOMYELITIS

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Prior to 1870 poliomyelitis occurred only as a sporadic disease of the very young child. During the 1870s in Europe, the 1880s in Scandinavia, the 1890s in the northern part of the United States and the 1930s in the southern part of the United States poliomyelitis took on a new character—occurring in epidemic proportions. The reason for this transition from a sporadic to an epidemic disease is unknown, but of particular interest is the fact that with this transition there has been a gradual increase in the average age of the persons afflicted.

There is recent evidence to support this historical belief that such changes are part of the pattern of the disease. At the present time this evolution seems to be occurring in the larger metropolitan communities of Osaka and Kobe in Japan. During 1938 and 1940 these urban areas experienced for the first time severe epidemics of poliomyelitis, most of the cases appearing in the very young children.

The period of evolution from sporadic to epidemic poliomyelitis corresponds roughly with the institution of widespread measures for improved sanitation. This interesting coincidence has led to the hypothesis that the virus is more widespread in areas where the sporadic disease predominates, making possible frequent exposures of the young infant to virus during the time when he still retains a high titer of passive immunity from his mother. Exposure to the virus under these conditions would surely stimulate further resistance to poliomyelitis and only occasionally result in the production of the frank disease. This theory might explain the infrequent cases of poliomyelitis in young children as they occurred in the early history of the disease in Europe and the United States. But, in regions where epidemics predominate, people are exposed to the virus less frequently and at a later period in life, when they have lost all or most of the passive immunity acquired from the mother. Thus there results a greater chance for the development of frank disease among older age groups rather than an increased resistance.

PORTALS OF ENTRY

Knowledge as to the possible portals of entry has been acquired through the study of characteristic lesions of poliomyelitis found in ganglions of certain cranial and peripheral nerves and has been offered as suggestive evidence of the path by which the virus has invaded the brain and spinal cord. Studies on experimental animals have indicated that such lesions in the sensory ganglions may result from a centrifugal spread of the virus following inoculation of the virus directly into the brain. Even though the weight of evidence in the

Read in the General Scientific Meetings at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1947.

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majority of cases indicates that the portal of entry is by way of the alimentary tract, it is recognized that in at least a fairly large number of cases the infection may have been via the peripheral nerves of the mouth and throat regions.

TRANSMISSION OF THE DISEASE

Many authorities believe that the greater majority of poliomyelitis infections are transmitted by intimate contact between a susceptible person and some one harboring the virus. The "some one harboring the virus" need not necessarily present clinical symptoms of the disease; indeed, there is considerable reason to believe that for every diagnosed case of the disease there may be approximately 100 symptom-free persons harboring the virus.

The fairly frequent recovery of poliomyelitis virus from feces, sewage, sewage disposal plants and flies has raised the question whether the transmission cycle may be from feces or sewage to flies, to man, with the possibility of an intermediate carrier—food. That an occasional case of the disease may be acquired by this route seems reasonable, but studies of many epidemics indicate that most cases of the disease are transmitted primarily through intimate contact.

THE RELATIONSHIP OF ANTIBODIES AND RESISTANCE TO THE DISEASE

The mechanism of immunity has perplexed investigators, because it is not unusual to find that the disease sometimes occurs in persons who have a high titer of serum antibodies; that persons recovering from a paralytic attack of the disease frequently do not show an increase in the titer of these antibodies, and, further, that monkeys recovered from a paralytic attack of the disease often show little or no serum antibody but do exhibit pronounced resistance to intracerebral injections with the same strain of virus. The general conclusion to be drawn from these apparently contradictory observations is that no relationship exists between humoral circulating antibodies and resistance to poliomyelitis.

Unfortunately most of these studies have been determined with respect to the Lansing virus, and there is no proof as yet that this virus is of great importance in the clinical disease or that the persons studied actually were infected with this strain of the virus.

Investigations designed to produce a vaccine are most intriguing and are being continued. It has been found that the monkey convalescent from a paralytic attack with the virus may exhibit little or no antibody in the circulating blood but will show high titers of antibodies in tissues of its central nervous system. Such an animal is usually resistant to further intracerebral inoculations with the same strain of virus. More recently it has been demonstrated that repeated intramuscular injections of live virus in monkeys apparently produce no clinical evidence of the disease but do result in the production of high titers of antibody in the circulating blood. When by this method there is produced an antibody titer in the circulating blood above the 1:800 level, these animals have been found to be solidly resistant to intracerebral inoculations of the virus. It would appear that, although the antibody titer in the circulating blood bears no direct relationship to resistance to the disease, there may be an antibody threshold in the blood which permits sufficient amounts to spill over into and to render resistant the tissues of the central nervous system.

THE METABOLISM OF CELLS AND RESISTANCE TO THE DISEASE

Clinicians have recognized that poliomyelitis generally is a disease of the well nourished. This observation has logically led investigators to study cell metabolism and its relation to resistance to disease. It has been found that when an anterior horn cell is regenerating a damaged axis cylinder this cell is solidly resistant to infection with the virus of poliomyelitis. Efforts are being directed toward the determination of the chemical or metabolic differences caused, on the one hand, between a regenerating cell which is resistant to the virus, and, on the other, a normal cell which is susceptible. Preliminary observations indicate that the virus of poliomyelitis may inhibit utilization of glucose by these cells. If this is true, such alteration would mean a serious loss in energy. Further studies have shown that there is a considerable derangement or disorganization of the oxygen-carrying enzymes following an infection of the nerve cells by the virus of poliomyelitis.

NEUROPHYSIOLOGIC OBSERVATIONS IN POLIOMYELITIS

Poliomyelitis was formerly believed to be flaccid paralysis due solely to destruction of anterior horn cells. Since it is now an established fact that poliomyelitis may affect most of the nerve cells in the brain and spinal cord, one would expect that the clinical signs of this disease can result from a mixture of both upper and lower motor neuron lesions.

Electromyographic studies show that the acute paralytic muscle at rest is usually electrically active as compared with the normal muscle at rest, which is usually electrically quiet. Recent reports from the Scandinavian countries differ somewhat from these conclusions in that they indicate that both the normal and the paralytic muscles at rest can be electrically inactive, although it is much more difficult and, in fact, sometimes almost impossible to put the paralytic muscle in a position in which it is electrically inactive. These observers further report that, whereas the normal muscle under voluntary contraction exhibits an arhythmic electrical discharge, the poliomyelitic muscle under voluntary contraction usually exhibits a rhythmic electrical discharge. If the latter observations are true it would indicate that the poliomyelitic patient has difficulty in performing a slow steady contraction with paretic muscle, and indeed this does seem to be the case.

NEW EXPERIMENTAL ANIMALS

The discovery some years ago that the cotton rat and the Swiss mouse could be infected with the virus of poliomyelitis raised the hopes of investigators that the availability of these animals would allow for an early solution to many of the problems of this disease. Unfortunately, it has been found that these animals are susceptible to only one strain of the virus, and that only when inoculated by the intracerebral route. These limitations have seriously hampered the studies on relation of nutrition to susceptibility and the search for chemotherapeutic agents, serums or vaccines which might offer a cure or preventive of the disease.

Recently importers have been able to bring cynomolgus monkeys from the Philippines to this country, and there is considerable hope that the susceptibility of these animals to infection by the oral route will make it possible to study with renewed effort those phases of research which have of necessity been held in abeyance.

IMPROVED LABORATORY METHODS FOR THE DETECTION OF THE VIRUS

The only available method for the detection of the virus of poliomyelitis is the inoculation into the brain of the monkey of material suspected of containing the virus. If the virus is present the animal may develop clinical and histopathologic signs of the disease. The second step is the injection of a suspension of infected nervous tissues of the first animal into a second monkey. This procedure is not only time consuming, laborious and expensive but does not always indicate the presence of minute quantities of the virus. The present procedures for concentration and partial purification of the virus are by chemical and physical means; for example, removal of fat and contaminating bacteria by ether, adsorption and precipitation of the virus by ammonium salts, and the concentration of the virus by the ultracentrifuge have vastly improved the methods for detecting minute quantities of the virus. The improvement of this test has necessitated more time consuming, expensive and complicated procedures and can be utilized only in certain special circumstances.

MAJOR PROBLEMS TO BE SOLVED

The lines of investigation that are now being pursued include the following major problems, which must be solved:

1. The development of a simple laboratory test to identify, preferably, a single virus particle.

2. Development of a simple diagnostic laboratory test to indicate whether or not infection with the virus has taken place.

3. Determination of the relative number of virus particles required to infect the human being and the laboratory animal.

4. Determination of the physical, chemical and biologic characteristics of the virus particle.

5. Determination of the number and characteristics of the different types of the virus which produce clinical disease in man.

6. Development of a full understanding of (*a*) the metabolism of the cell and of the virus, and of (*b*) how the metabolism of the virus interacts with the metabolism of the host cell to produce disease.

The solution of these problems would seem to be fundamental to the development of any particular preventive or curative measures for infantile paralysis.

TREATMENT

When there is developed a nontoxic therapeutic agent —drug, antibiotic or serum—which will be specific against all strains of the virus of poliomyelitis there may then be presented to the members of the medical profession a standardized form of treatment. Until then it must be admitted that during the acute, or communicable, period of the disease treatment is entirely symptomatic. The physician should make the patient as comfortable as possible, protect the muscles already involved by the action of the virus on the nerve cell that innervates the muscle and prevent deformity.

There are those who have attempted to establish an empirical approach to the treatment of this disease. Acute anterior poliomyelitis demands of the physician and his professional co-workers the same exercise of judgment in the administration of therapeutic measures as does any other acute infection. He must consider the patient first, the disease as secondary in importance —empiricism does not lend itself to the art or science of medicine.

RELATION OF THE PROBLEMS OF POLIOMYELITIS TO THE PROBLEMS OF DISEASE IN GENERAL

There is considerable misunderstanding with regard to the ultimate purpose behind the creation of various organizations to combat specific diseases. While it is true that such an organization is primarily concerned with the eradication of one disease, no organization could conceivably carry out its program for any length of time unless it had as its real objective the eradication of disease in general.

The function of the human body, whether in the direction of the normal or the pathologic, is guided by the metabolism of the cells which make up the organism. If the chemical processes within and between these cells go forward in continuous normal sequence in one direction, the result is normality of the person, or health. If the sequence of these chemical reactions is in any way altered, whether by nutrition, by contact with an infectious agent, by trauma or by heredity, the net result is abnormality, or disease. An intelligent approach to an understanding of disease, whether such disease is cancer or allergy, infectious or degenerative, must be based on an understanding of the complicated metabolic process consummating in health. The technics for determining quantitatively these chemical reactions and their interrelations with one another are for the most part undeveloped. Research directed toward the solution of any one disease offers an opportunity to study under optimal conditions relatively few of these chemical processes, and an understanding of the entire problem can be obtained only by making the most of every single opportunity for fundamental investigation. The solution of many seemingly unrelated problems undoubtedly depends on the same basic knowledge, and any investigation which utilizes the processes of only one disease offers little opportunity to solve this problem. It is imperative that investigators in each disease be provided with every opportunity to exploit to the fullest extent the opportunities to contribute to fundamental knowledge which are inherent in that disease problem.

120 Broadway.

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Accidents Are Less Expensive in Older Workers.—The belief that the older worker is more of an accident risk than the younger worker is not justified by facts. Kossoris has shown that in 26,000 employees in four plants the accident rate was highest for the younger workers in terms of frequency rates. That is, the average number of disabling injuries per million workers was higher among young workers than among old. Men between the ages of 40 and 54 had rates only about two-thirds as high as workers under 21, and 70 per cent as high as those in their twenties. The rate for workers aged 60 and over was lower than for those under 21 and about the same as for those between 21 and 29 years of age. . . . There are some exceptions to the general rule that older workers are less prone to accidents. One of these is connected with working in high environmental temperatures. In a study of the incidence of accidents among coal miners reported by Vernon and Bedford it was found that, the higher the temperature, the greater was the rise in accidents among older workers as compared with younger ones. Although usually older workers tend to be involved in few accidents, the duration of each disability tends to increase. Their injuries are apt to be more severe, and the healing process is slower. . . . The diminished accident rate for older workers more than counterbalances this longer healing period so that, in general, it may be concluded that older men have proved less expensive from the standpoint of accident cost than younger men.—Shock, N. W.: Older People and Their Potentialities for Gainful Employment, *J. Gerontology*, April 1947.

SUSTAINED HYPERTENSION

Predisposing Factors and Causes of Disability and Death

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In previous publications[1] statistical analyses have been made to indicate the prognostic significance of transient hypertension, transient tachycardia and overweight. It has been shown that the presence of each of these three conditions, by itself, increases the probability of the later development of sustained hypertension and of retirement or death with cardiovascular-renal disease. The presence of two of these conditions is of greater importance in this respect than that of any one alone. The presence of all three is a circumstance of major prognostic importance.

The present study is intended to integrate the earlier reports. Because of the relatively small number of men who died during the periods of observation, retirements for disability and deaths have now been grouped together as medical casualties in service. In addition, the frequency of the primary causes of retirement and death have been tabulated for the cases with sustained hypertension. And finally, conclusions have been drawn which, it is hoped, will prove useful in formulating revised criteria for the selection of those physically qualified for military service.

MATERIAL, CRITERIA AND METHOD

The same medical records of 22,741 army officers which served as the source of material for earlier papers in the series were used in this investigation. The manner of collecting and analyzing the data has been described in previous publications.[1]

By sustained hypertension was meant a reading of over 150 mm. of mercury systolic or 90 diastolic, persisting throughout one examination and not followed in subsequent examinations by levels lower than these. Transient hypertension was taken to mean a reading above these same levels but which was followed on any particular examination or at a later examination by a reading below these levels. By transient tachycardia was meant a heart rate of 100 per minute or over, of sinus origin, which was followed after rest on any particular examination by a rate under 100. An officer was considered to be overweight if he was heavier, by 20 pounds (9 Kg.) or more, than the standard given in Army Regulations 40-105, issued by the War Department on Oct. 15, 1942.[1e] These standards were calculated according to height and age. The 20 pound (9 Kg.) excess as a criterion of obesity was chosen arbitrarily and without regard for the acceptable minimum and maximum weights included in the original army table. The age was noted at which overweight was first observed, and from then on the person was placed in the overweight class.

Cardiovascular-renal conditions, if present, were always included in the tabulation as causes of retirement or death, even though not recorded as directly responsible for either. Thus an officer may have retired or died with such a disorder but not necessarily because of it.

As in the papers to which reference already has been made, the method of person-years, specific for age, was employed in the analysis in order to obtain the proper base from which to calculate the various rates on the usual annual basis.

TABLE 1.—*Later Occurrence of Sustained Hypertension, by Age, Among 22,741 Army Officers*

Age	Person-Years Observed	Number Developing Sustained Hypertension	Rate per 1,000
25-29	33,199	19	0.6
30-34	39,071	41	1.0
35-39	42,479	100	2.4
40-44	41,300	191	4.6
45-49	34,091	365	10.7
50-54	21,954	406	18.5
55-59	11,776	350	29.7
Total	223,870	1,472	6.6

FACTORS INFLUENCING THE LATER DEVELOPMENT OF SUSTAINED HYPERTENSION

Transient Hypertension and Transient Tachycardia.—There were, among the 22,741 officers, 223,870 person-years of observation, indicating an average follow-up of 9.8 years. In table 1 are given the rates of developing sustained hypertension at the various ages, for the entire experience. Of the total, 176,410 person-years pertained to the group without transient hypertension. In 550 persons of this group sustained hypertension developed, giving a rate of 3.1 per thousand. Among the remaining 47,460 person-years for the group with transient hypertension, there were 922 cases with later sustained hypertension, or a rate of 19.4 per thousand. However, this latter group is loaded for the older ages so that, after adjusting for this fact, the rate becomes only 11.3 per thousand. Thus, the rate of the later development of sustained hypertension is 3.6 times as high in the group with transient hypertension as in the group without it.

It has already been shown[1c] that, with respect to the later development of sustained hypertension, all levels of transient hypertension, both systolic and diastolic, are significant. Of particular interest was the observation that slight degrees of elevation are important, even when the systolic level alone is involved. Of the greatest prognostic significance, however, is a transient rise in diastolic pressure above 100 mm. of mercury.

Dr. John W. Fertig, professor of biostatistics, Columbia University College of Physicians and Surgeons, aided in the analysis and preparation of the material for final presentation.

This is the sixth and final paper in a series dealing with "Studies of Blood Pressure in Army Officers." The six papers will be printed together as a pamphlet, copies of which may be obtained from the authors.

The work described in this paper was begun under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Columbia University. The contract was transferred on Nov. 1, 1945 from the Office of Scientific Research and Development to the Army Research and Development Board, Office of the Surgeon General.

1. (*a*) Hillman, C. C.; Levy, R. L.; Stroud, W. D., and White, P. D.: Studies of Blood Pressure in Army Officers: Observations Based on an Analysis of the Medical Records of 22,741 Officers of the United States Army, J. A. M. A. **125:** 699 (July 8) 1944. (*b*) Levy, R. L.; Hillman, C. C.; Stroud, W. D., and White, P. D.: Transient Hypertension: Its Significance in Terms of Later Development of Sustained Hypertension and Cardiovascular-Renal Diseases, ibid. **126:** 829 (Nov. 25) 1944. (*c*) Levy, R. L.; White, P. D.; Stroud, W. D., and Hillman, C. C.: Transient Hypertension: The Relative Prognostic Importance of Various Systolic and Diastolic Levels, ibid. **128:** 1059 (Aug. 11) 1945; (*d*) Transient Tachycardia: Prognostic Significance Alone and in Association with Transient Hypertension, ibid. **129:** 585 (Oct. 27) 1945; (*e*) Overweight: Its Prognostic Significance in Relation to Hypertension and Cardiovascular-Renal Diseases, ibid. **131:** 951 (July 20) 1946.

When transient tachycardia is present as well as transient hypertension, the picture is even more specific. Among the 165,216 person-years in which neither condition was present, there were 409 cases of later sustained hypertension, giving a rate of 2.5 per thousand. The rates for the groups in which only one of these two conditions was present were 3.4 times as large in both instances, after due allowance was made for the differences in the age distributions. When both conditions were present, the rate for the later development of sustained hypertension was 7.5 times as large as when both were absent.

TABLE 2.—*Later Occurrence of Sustained Hypertension, by Age, for Experience Without Transient Hypertension, Transient Tachycardia or Overweight*

Age	Person-Years Observed	Number Developing Sustained Hypertension	Rate per 1,000
25-29	25,339	8	0.3
30-34	26,926	10	0.4
35-39	26,269	28	1.1
40-44	22,562	32	1.4
45-49	16,650	65	3.9
50-54	9,681	53	5.5
55-59	4,542	48	10.6
Total	131,969	244	1.8

Overweight.—When something is known about the status of the person with respect to overweight, the situation is greatly altered. In table 1 are given the rates of development of sustained hypertension for the entire experience. In table 2, by way of contrast, are given the rates for the 131,969 person-years when transient hypertension, transient tachycardia and overweight were absent. There were 244 cases in this group, giving a rate of 1.8 per thousand. When adjusted to the age distribution of table 1, the rate becomes 2.3 per thousand. This is only about one third as high as the rate of 6.6 for the whole experience in which the various factors are mixed together, with one or another present or absent in different portions.

There are eight possible combinations of overweight, transient hypertension and transient tachycardia. These have not all been studied because of the complicated processes of tabulation involved and also because the number of person-years in some groups would be exceedingly small. The important relationships with regard to overweight have already been demonstrated.[1e] When overweight alone was present the rates were, on the average, 2.5 times as large as those of table 2, in which none of the three factors was present. When overweight was absent but both other factors were present the rates were, on the average, 8.7 times as large as those of table 2. Finally, when all three factors were present the rates were 12.3 times as large. All these differences are significant, indicating that the presence of overweight, regardless of the presence or absence of the other two factors, increases the risk of the later development of sustained hypertension.

CASUALTY RATES

In preceding papers disability retirements and deaths have been considered separately. In the discussion which follows, these categories have been combined as casualties because they represent, together, the total loss of manpower to the service and also because of the comparatively small number of deaths which occurred during the periods of observation. The low death rate was due to care in initial selection as well as to prompt retirement when disability rendered the officer unfit for active duty.

In table 3 are given the casualty rates among the 22,741 men. These may be summarized conveniently by actuarial methods. They imply that of 1,000 officers at age 25, 509 would survive to age 60 while 491 would be casualties by that age. Of the 491 casualties, 218 would be associated with cardiovascular-renal diseases and 273 with other conditions.

Regardless of other factors, the casualty rates for cardiovascular-renal diseases are significantly higher for the group with transient hypertension than for the group without it. On the average, the rate is twice as great. The casualty rates for non-cardiovascular-renal diseases also tend to be a little higher at most ages when transient hypertension is present than when it is absent. While the rate is only 20 per cent larger, on the average, this is statistically significant.

Analysis of the relative importance of various levels of transient hypertension in relation to the casualty rates with cardiovascular-renal diseases shows the same trends as were noted for the later development of sustained hypertension, and as were noted for retirements and deaths separately.[1e] Here again, with one possible exception, every transient elevation above the normal, for both systolic and diastolic pressures, shows a statistically significant increase in the rate. Again, it is a diastolic reading of over 100 mm. of mercury which is of the greatest importance.

When transient tachycardia is present as well as transient hypertension, other interesting differences become apparent. The casualty rates for the cardiovascular-renal diseases when neither condition is present is 2.8. If transient hypertension alone is present, the rate is 1.9 times as large; if transient tachycardia is present alone, the rate is 1.8 times as large. If both transient hypertension and transient tachycardia are present, the rate is 2.9 times as large. All these differences are significant. The presence of either condition alone, therefore, has about the same effect in increasing the cardiovascular-renal casualty rate. The presence of both factors is of considerably greater importance in this respect. The effect on the rates for the non-cardiovascular-renal diseases is considerably less. The rate when neither condition is present is 7.7 per thousand. When transient tachycardia alone is present the rate is 70 per cent higher, but for the other two comparisons the rates are only some 20 per cent higher.

TABLE 3.—*Disability Retirements and Deaths, With and Without Cardiovascular-Renal Diseases, by Age, for 22,741 Officers*

		Casualties				
		Number		Rates per 1,000		
Age	Person-Years Observed	CV-R	Non-CV-R	CV-R	Non-CV-R	Total
25-29	33,241	12	246	0.4	7.4	7.8
30-34	39,176	15	282	0.4	7.2	7.6
35-39	42,747	46	324	1.1	7.6	8.7
40-44	41,862	124	377	3.0	9.0	12.0
45-49	35,180	250	367	7.0	10.4	17.5
50-54	23,298	406	292	17.4	12.5	30.0
55-59	13,022	477	190	36.6	14.6	51.2
Total	228,556	1,330	2,078	5.8	9.1	14.9

When overweight is taken into consideration, as well as transient hypertension and transient tachycardia, other differences appear. When all these factors are absent 132,923 person-years are involved, among which there are 324 casualties with cardiovascular-renal diseases and 984 with non-cardiovascular-renal diseases.

TABLE 4.—*Disability Retirements and Deaths, With and Without Cardiovascular-Renal Diseases, by Age, for Experience Without Transient Hypertension, Transient Tachycardia and Overweight*

Age	Person-Years Observed	Casualties: Number CV-R	Casualties: Number Non-CV-R	Casualties: Rates per 1,000 CV-R	Casualties: Rates per 1,000 Non-CV-R	Casualties: Rates per 1,000 Total
25-29	25,356	8	174	0.3	6.9	7.2
30-34	26,957	7	167	0.3	6.2	6.5
35-39	26,342	10	157	0.4	6.0	6.3
40-44	22,708	29	169	1.3	7.4	8.7
45-49	16,885	68	146	4.0	8.6	12.7
50-54	9,924	93	99	9.4	10.0	19.4
55-59	4,751	109	72	22.9	15.2	38.1
Total	132,923	324	984	2.4	7.4	9.8
Adjusted to correspond to age distribution of person-years in table 3				3.2	7.8	11.0

The rates at the various ages are given in table 4. These may be contrasted with the rates for the total experience in table 3, in which the various factors are mixed together, with one or another absent in different portions. It is thus apparent that the cardiovascular-renal casualty rates at the various ages, shown in table 4, are approximately half as large as those for the total experience. The rates for non-cardiovascular-renal diseases also run somewhat lower. The casualty rates at all ages, as given in table 4, are not immediately comparable to the corresponding values of table 3 because of differences in the relative age distributions. After proper adjustment, the rates at all ages become 3.2 for cardiovascular-renal diseases, 7.8 for non-cardiovascular-renal diseases, and 11.0 for all causes, contrasted with the corresponding rates of 5.8, 9.1 and 14.9 for table 3.

The effect of overweight may also be noted by comparing the cardiovascular-renal and non-cardiovascular-renal casualty rates when only the factor of overweight is present, with those of table 4, when all the modifying factors are absent. On the average, the rate is 50 per cent larger for the cardiovascular-renal conditions and 20 per cent larger for the non-cardiovascular-renal conditions. The latter increase is, however, of doubtful significance. When transient hypertension, transient tachycardia and overweight are all present, the rates are 260 per cent larger and 40 per cent larger, respectively.

These comparisons may be restated as follows: Of 1,000 persons at age 25 without any of the three modifying factors present, 610 would survive to age 60 while 390 would be casualties; 140 would be casualties attributable to cardiovascular-renal diseases and 250 to non-cardiovascular-renal diseases. With overweight alone present, there would be 545 survivors to age 60 with 455 casualties, of which 178 would be associated with cardiovascular-renal diseases and 277 with other conditions. With transient hypertension, transient tachycardia and overweight all present, there would be only 344 survivors and 656 casualties, of which 370 would be cardiovascular-renal and 286 non-cardiovascular-renal.

It is thus clear that overweight alone is significant as a factor in increasing the casualty rate for cardiovascular-renal diseases. If combined with transient hypertension and transient tachycardia, it is followed by a rate almost four times as great as in the group in which none of these conditions is found. The effect of overweight is much less striking for the non-cardiovascular-renal diseases.

CASUALTIES AMONG CASES OF SUSTAINED HYPERTENSION

A review of the primary causes of retirement gives, of necessity, an incomplete picture of the late effects of hypertension because it can deal only with those which occur during the period of observation. Information concerning an officer's state of health after leaving the army is not contained in his file. After sustained hypertension was first discovered, the average duration of follow-up, in this series of cases, was only about three years. The number of men who died in service was comparatively small; most of those suffering from a chronic ailment were promptly retired and the causes of death are not known. The figures to be given, therefore, are not comparable to those appearing in other studies of hypertensive vascular disease in which the follow-up periods were longer. However, the recorded retirements and deaths, together, furnish data on total casualties while on active duty.

Among 22,741 officers, sustained hypertension developed in 1,472 (table 1). This is an incidence of 6.5 per cent. In table 5 are given the primary causes of retirement and death for the casualties in this group. There were in all 918 casualties, of which 741 retired and 177 died. The various causes are listed in the order of their frequency with respect to total casualties.

TABLE 5.—*Primary Causes of Retirement and Death in Group with Sustained Hypertension*

Causes of Retirement and Death	Number: Retired	Number: Died	Number: Total Casualties
Cardiovascular	534	96	630
Hypertension	318	0	318
Coronary heart disease (including angina pectoris and thrombosis)	80	47	127
Cerebral arteriosclerosis (including hemorrhage and thrombosis)	68	24	92
Valvular heart disease	21	0	21
Heart disease (type unspecified)	10	11	21
Congestive failure	7	11	18
Arteriosclerosis (generalized)	16	0	16
Cardiac arrhythmia	13	0	13
Aneurysm of aorta (ruptured or dissecting)	0	3	3
Dilatation of aorta	1	0	1
Renal	21	12	33
Chronic nephritis	17	9	26
Other	4	3	7
Miscellaneous	186	69	255
Total	741	177	918

Retirements.—Of 555 persons retired for cardiovascular-renal diseases, the most frequent primary cause of disability obviously was hypertension, which accounted for 318 cases. Next in order came coronary heart disease, with 80 cases; in 40 of these the patient experienced an attack of thrombosis. Cerebral arteriosclerosis was third on the list, with 68 cases; these

included 17 cases of hemorrhage and 10 of thrombosis of cerebral vessels. These three conditions together were responsible for 84 per cent of all retirements for cardiovascular-renal diseases. Valvular heart disease, cardiac disease of unspecified type, congestive failure, generalized arteriosclerosis, cardiac arrhythmia and dilatation of the aorta each accounted for less than 22 cases.

In the renal group there were 21 cases, of which 17 were instances of chronic nephritis. Uremia was not noted.

There were 186 retirements for miscellaneous reasons, with neuropsychiatric conditions heading the list with 53 cases. Trauma, with 20, and arthritis, with 18, came next in order.

Deaths.—One hundred and eight officers with sustained hypertension died of cardiovascular-renal conditions while in service. Coronary heart disease caused death in 47; among these, thrombosis occurred in 39. Cerebral hemorrhage killed 24. These two conditions together accounted for 66 per cent of the 108 fatalities due to cardiovascular-renal conditions. It is of interest that in not a single instance was valvular heart disease given as the primary cause of death. Cardiac disorders of unspecified type and congestive failure caused 11 deaths each. There were 3 cases of aortic aneurysm; 2 ruptured, and 1 was of the dissecting variety.

Among 12 renal deaths, 9 were due to chronic nephritis. Uremia occurred only once.

In the miscellaneous group malignant diseases headed the list, having caused death in 14 cases. Pneumonia and trauma each accounted for 11 deaths, and suicide for 9.

Total Casualties Due to Cardiovascular-Renal Diseases.—If retirements and deaths are combined, hypertension itself, coronary heart disease and cerebral vascular disorders were by far the leading causes of loss to the service of men with sustained hypertension. Together, they caused 81 per cent of the total number of casualties due to cardiovascular-renal conditions. Chronic nephritis was next in frequency. Of lesser importance were valvular heart disease, cardiac disease of unspecified type, congestive heart failure and generalized arteriosclerosis.

Among the miscellaneous causes, in order of frequency, were neuropsychiatric conditions, trauma, arthritis, gastrointestinal disorders and malignant disease.

SUMMARY AND CONCLUSIONS

1. Statistical analyses were made of the medical records of 22,741 officers of the United States Army to determine the prognostic significance of transient hypertension, transient tachycardia and overweight noted in the course of annual physical examinations. The method of person-years was employed in the analyses.

2. The indexes chosen to demonstrate the influence of these three factors on the subsequent state of health and cause of death were the rates of the later development of sustained hypertension and of retirement or death with cardiovascular-renal diseases.

3. Transient hypertension or transient tachycardia or overweight, each by itself, increased the probability of the later development of sustained hypertension and of retirement or death with cardiovascular-renal disease. The presence of two of these conditions was of greater importance, in these respects, than that of any one alone. The presence of all three was a circumstance of major prognostic importance.

4. In the group in which sustained hypertension developed, the leading causes of retirement because of cardiovascular-renal diseases were hypertension itself, coronary heart disease and cerebral arteriosclerosis, including hemorrhage and thrombosis. These three conditions together accounted for 84 per cent of such retirements. Coronary heart disease and cerebral hemorrhage together were responsible for 66 per cent of the deaths from cardiovascular-renal conditions during the period of observation.

5. In revising standards for the selection of those physically qualified for military service, factors predisposing to the later development of sustained hypertension and cardiovascular-renal diseases should be taken into account. When making disposition of men in whom sustained hypertension develops while they are in service, consideration may well be given to the high incidence and disabling nature of the circulatory and renal complications associated with this condition. The extent to which the conclusions derived from these studies are applied can be varied according to the need for manpower.

6. It seems probable that the facts obtained from the analyses of the records of army officers hold true also for the general male population of comparable physical fitness and similar age groups.

POSTOPERATIVE RESULTS IN PRIMARY TENDON SUTURE OF THE HAND AND WRIST

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Successful repair of the severed tendon is a problem which has not been completely solved. Numerous excellent articles on the subject have appeared in recent years,[1] but certain factors still prevent the surgeon from achieving the best result in the surgical repair of a lacerated tendon, especially of the hand and wrist.

In the period from Jan. 1, 1935 to Jan. 1, 1945 primary suture of the tendons of the hand and wrist was performed at the Mayo Clinic in 43 cases. Only the cases in which the patients were treated within four hours after injury and in which bone was not involved were included. Cases of secondary repair and tendon grafts were excluded from the group. Tendon lacerations, compound fractures and avulsions are encountered fairly commonly in the same case at the clinic because of the accidents which occur in the large surrounding rural community. In the fall accidents with corn shredders and other farm machinery occur frequently. Fortunately, the number of these accidents is diminishing, due in no small part to the publicity

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1. (*a*) Bunnell, S.: Primary Repair of Severed Tendons: The Use of Stainless Steel Wire, Am. J. Surg. **47**: 502-516 (Feb.) 1940. (*b*) Koch, S. L.: Division of the Flexor Tendons Within the Digital Sheath, Surg., Gynec. & Obst. **78**: 9-22 (Jan.) 1944. (*c*) Mason, M. L.: Primary and Secondary Tendon Suture: A Discussion of the Significance of Technique in Tendon Surgery, ibid. **70**: 392-402 (Feb.) 1940. (*d*) Miller, H.: Repair of Severed Tendons of the Hand and Wrist: Statistical Analysis of Three Hundred Cases, ibid. **75**: 693-698 (Dec.) 1942.

given them at farmers' meetings. Young has been especially active in this regard.[2]

The average time which elapsed from injury to repair was one hour and forty-two minutes. This was a favorable factor. The incidence of infection was low: in 12 cases slight drainage occurred about the suture, and in only 2 cases was frank infection present. With the present availability of chemotherapeutic agents the incidence of infection may be expected to fall even lower.

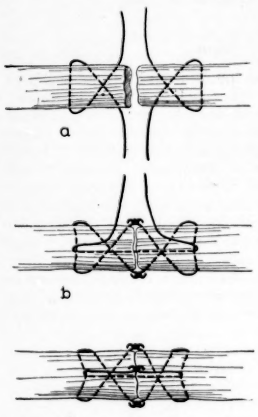

Fig. 1.—Method of suturing tendon. In *b* and *c* the usual method is modified. A "stay" suture is used for additional strength and closer approximation.

Almost all suture material used during this ten year period was silk. Since Bunnell's[1a] report of his work we have used stainless steel wire sutures, as well as silk, with gratifying results. In most cases we prefer to bury the suture. The technic of suture varies, but the method shown in the accompanying illustration has been found satisfactory. The actual technic is difficult to evaluate because the injuries have been repaired by several different surgeons. Excellent articles covering surgical principles and technic have been published by Mason[1c] and by Koch.[1b]

The following rules are important: 1. Thorough toilet of the wound should be carried out. 2. Tissues should be handled carefully. 3. Hemostasis should be complete. 4. Incisions should be made in the creases. 5. A minimal number of sutures and small knots should be used. 6. The fibrous tendinous sheath should be removed, and fat should be placed in apposition over tendons. 7. Tendons of the flexor digitorum sublimis should be removed or allowed to retract; only tendons of the flexor digitorum profundus should be sutured when the two are severed. 8. Splints should be used, and physical therapy should be given.

The question of whether splints should be used is somewhat controversial. No deductions can be made from the cases reported herein. All tendons were splinted for varying periods. Bunnell recommended early motion after repair to prevent adhesions. Koch and Mason advocated splinting for three or four weeks to prevent adhesions. We think that splinting of the tendons of the flexor muscles for four weeks and of tendons of the extensor muscles for six weeks is ideal. The splint should be removed as soon as possible (in a few days if integrity of the suture is adequate, in ten or twelve days if it is doubtful) and the tendon should be passed through a full range of active motion once a day. Excessive motion during this healing stage may increase adhesions.

2. Young, H. H., and Ghormley, R. K.: Accidents on the Farm, J. A. M. A. **132**: 768-771 (Nov. 30) 1946.

Excellent results were those in which there was no disability and the patient had no complaints. Good results were those in which 75 per cent or more of normal function was obtained, but the result was short of perfect. Poor results were those in which less than 75 per cent of normal function was restored. Cases involving the tendons of the extensor muscles are grouped together, for the problem is essentially the same whether they are severed at the wrist, metacarpal region or fingers. Results were poorest in cases of injury of the tendon of the flexor muscle when the injury was in a region where a fibrous tendinous sheath exists, as in the finger or under the transverse carpal ligament, which is essentially a fibrous tendinous sheath. Results for the two groups are presented in the accompanying table. In the 3 cases of severed tendons of the flexor muscles of the fingers and palm in which the results were classed as poor, a second operation was performed later and results were good. In 1 case the suture pulled out after the first operation; in the other 2, poor results were due to adhesions and later transplantation of tendons was performed with a good outcome.

ANALYSIS OF THE POOR RESULTS

I. *Tendons of the Flexor Muscles in the Fingers and Palm*

CASE 1.—*Tendon from the flexor digitorum profundus to the forefinger.* The tendon was badly contused and lacerated by an electric fan. Primary suture was not done. Because the distal phalanx ultimately became stiff and without sensation, amputation of the distal phalanx was performed.

CASE 2.—*Tendons from the flexor digitorum profundus and flexor digitorum sublimis to the index finger.* The tendons were lacerated by a buzz saw. The distal interphalangeal joint was not movable; the proximal interphalangeal joint could be flexed only to 30 degrees. The tendons of the flexor digitorum profundus had become adherent to the tendons of the flexor digitorum sublimis. Secondary repair was advised, but the patient refused surgical treatment.

CASE 3.—*Tendon of the flexor pollicis longus.* After a buzz saw caused injury to the tendon at the base of the proximal phalanx of the thumb slight purulent drainage occurred for two weeks. As a final result the distal phalanx could not be flexed but was stable in a neutral position.

CASE 4.—*Tendons from the flexor digitorum profundus and flexor digitorum sublimis to the index finger.* In spite of warnings by physicians[3] injuries on broken porcelain handles of water faucets still occur. This patient severed the tendons from the flexor muscles to the index finger at the metacarpophalangeal joint on the broken handle of a faucet. End to end suture of both tendons was performed, and infection did not occur; but as a result only half normal flexion of the distal and middle phalangeal joints could be accomplished. However, the patient is able to type.

Results of Primary Repair with Primary Suture of Tendons of the Hand and Wrist

Site	Cases in Which Results Were: Excellent	Good	Poor	Questionable
Tendons of flexor muscles				
Fingers and palm	5	3	3	
Wrist	6	..	1	
Tendons of extensor muscles	12	2	2	1*
Totals	23	5	11	1

Total traced patients, 40
Total patients, 43

* Finger was stiff before injury.

3. Steenrod, E. J.; Ghormley, R. K., and Craig, W. McK.: Injuries of the Hands Due to Shattered Porcelain Handles of Water Faucets, Surg., Gynec. & Obst. **64**: 950-955 (May) 1937.

CASE 5.—*Tendons from the flexor digitorum sublimis and flexor digitorum profundus to the index finger.* The tendons were severed at the metacarpophalangeal joint on the porcelain handle of a water faucet. Silk sutures pulled out, and repair was made again one month later. The result of the secondary repair was classified as good (more than 75 per cent of normal function in the finger).

CASE 6.—*Tendons from the flexor digitorum sublimis and flexor digitorum profundus to the ring finger.* The tendons were lacerated by a power mower. Infection occurred, and the tendon sloughed at the proximal interphalangeal joint. A tendon was transplanted subsequently. The tendon of the extensor muscle of the fourth toe was used. The result was classed as good after the secondary procedure.

CASE 7.—*Tendon of the flexor pollicis longus.* The tendon was lacerated on a broken cup. Adhesions occurred, and as a result the distal phalanx could not be flexed. However, the joint was stable.

CASE 8.—*Tendons from the flexor digitorum sublimis and flexor digitorum profundus to the ring finger.* This laceration occurred at the metacarpophalangeal joint when the patient, a boy 2 years of age, fell on some glass. The original repair of the tendon to the fourth finger was successful. The little finger failed to function after the first repair. Another operation was performed, but no appreciable improvement in flexion resulted.

II. *Tendons of the Flexor Muscles at the Wrist*

CASE 9.—This patient fell through a window and all tendons of the flexor muscles, nerves and radial and ulnar arteries at the wrist were lacerated. The arterial lacerations were not complete and some circulation persisted, but an arteriogram later showed terminal occlusion of all digital arteries without adequate collateral circulation. The poor result cannot be attributed entirely to the injury to the tendons.

III. *Tendons of the Extensor Muscles*

CASE 10.—*Tendons from the extensor digitorum communis to the fourth and fifth fingers.* Laceration occurred while the patient was chopping wood with an ax. The injury was located 5 inches (12.7 cm.) above the wrist. Splinting was carried on for sixty days after suture of the tendons with silk. When the patient was last examined, nine years after the injury, full extension of the fingers was possible when the wrist was held in a neutral position, but the fingers could not be fully extended when the wrist was dorsiflexed. The patient did not consider that he was handicapped for general labor.

CASE 11.—*Tendon from the extensor digitorum communis to the index finger.* The tendon was lacerated at the proximal interphalangeal joint. After repair of the injury with silk sutures, seropurulent drainage occurred. On last examination the joints of the distal and middle phalanges were practically immovable.

SUMMARY

The postoperative results of suture of acute lacerations of the tendons of the hand and wrist encountered at the Mayo Clinic in a ten year period have been reported. Poorest results were obtained when lacerations of the tendons of the flexor muscles occurred at the finger through the fibrous tendinous sheath. Careful adherence to the rules presented gives a higher percentage of good results. Two or more surgical procedures are necessary in many cases before all that can be done for the patient is accomplished. The poor results have been evaluated carefully. In some cases they were due to infection; in others, to suture of the tendon of the flexor digitorum sublimis as well as the tendon of the flexor digitorum profundus. In 1 case poor results were due to prolonged splinting. In some of the cases in which the results were classed as poor there seemed to be factors which were beyond control.

POLYETHYLENE, A NEW SYNTHETIC PLASTIC FOR USE IN SURGERY

Experimental Applications in Neurosurgery

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The synthetic plastics industry has contributed a large number of materials that have been used in making diagnostic and therapeutic instruments. The number of synthetic plastics that can be buried safely within human tissues, however, is surprisingly small. Methyl methacrylate ("lucite," "plexiglas," "perspex") and nylon have been found, after extensive animal experimentation and clinical use, to be well tolerated by tissues.[1] Methyl methacrylate is a hard, transparent plastic suitable for cranioplasty, dentures, soft tissue prostheses in plastic surgery, rigid tubes and other uses not requiring pliability. Nylon is well known as a suture material. Many other plastics have been used sporadically in clinical surgical practice but discarded for various reasons.

There is need for a synthetic plastic material of pure composition, well tolerated by tissues, which can be made into flexible tubes and thin, pliable sheets. A relatively new plastic material, polyethylene [1a] ("polythene"), has been found to fill these needs. The subsequent discussion will deal with a description of polyethylene and the presentation of experimental data.

DESCRIPTION OF POLYETHYLENE

Polyethylene is a long-chained polymer of ethylene and has, on theoretic grounds, the simplest chemical formula of all the plastics.[1b] Each molecule is formed of a saturated aliphatic hydrocarbon chain, each carbon atom of which carries two hydrogen atoms:

$$\left(-\begin{matrix}\mathrm{H}\\ \mathrm{C}\\ \mathrm{H}\end{matrix}-\right)_n$$

Bailey[2] has stated that each molecule contains 200 to 1,000 or more ethylene units. As it is now manufactured, polyethylene has a molecular weight of about 18,000, which is suitable for extrusion into tubes and thin sheets.

Polyethylene was first produced in 1936, when a new process involving polymerization of ethylene under extremely high pressures was developed in Great Britain.[3] Somewhat later commercial production was begun, and the material was used extensively in the manufacture of airplanes as an electric wire insulator. The production of polyethylene was begun in the United States in 1943.

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1. Ingraham, F. D.; Alexander, E., Jr., and Matson, D. D.: Synthetic Plastic Materials in Surgery, New England J. Med. **236**: 362-368, 402-407, 1947.

1a. Polythene in bulk is furnished to manufacturers by E. I. du Pont de Nemours and Company, Inc.

1b. Pure polyethylene tubing is obtainable from the Surprenant Electrical Insulation Company, 199 Washington Street, Boston. Pure polyethylene film is obtainable from the Harwid Company, 1108 Boylston Street, Boston.

2. Bailey, R. L.: Polythene Used in Britain as Insulation in British Aircraft, E. I. du Pont de Nemours & Co., Inc., 1941.

3. Plastics Educational Booklet, American Association of School Administrators, Nov. 1, 1945. Prepared by Committee of Delaware Members. H. V. Holloway, State Superintendent of Schools, Delaware, Chairman.

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This plastic has a microcrystalline structure; it is not completely transparent, but has a slightly cloudy appearance. It is a decidedly tough thermoplastic resin which, unlike most plastic materials, does not require the addition of another chemical compound to make it flexible and pliable. Such chemicals, called plasticizers, are frequently added to plastic materials to increase their pliability, but plasticizers are generally tissue irritants. In thin sections polyethylene is extremely flexible, but it does not have the limp, rubbery quality characteristic of most nonrigid plastics. It has been used extensively in industry because of its electrical insulating properties. To enhance these properties substances called antioxidants are sometimes added. These added substances, the exact nature of which is not divulged by the manufacturers, are considered to be as harmful to tissues as plasticizers, and only the pure polyethylene should be used in surgical practice. A more complete discussion of this aspect of synthetic plastics may be found elsewhere.[1]

Polyethylene will stretch without breaking easily, but it has relatively little elasticity. It is light, with a specific gravity of 0.92. Water absorption is slight; the material is unaffected by salt water. It is chemically inert and is resistant to most of the common solvents. It is not affected at room temperatures by such compounds as concentrated hydrochloric, sulfuric or hydrofluoric acids. Concentrated sodium hydroxide does not alter the plastic. Carbon tetrachloride and trichloro-ethylene cause the plastic to swell at room temperature but do not dissolve it.

Polyethylene becomes amorphous above 115 C., but its physical properties are not significantly altered by ordinary climatic temperatures or by the range of body temperature changes. It remains flexible and strong over a wide range of temperature changes.

Because of its low melting point, polyethylene is reduced to an amorphous mass by autoclaving. Boiling it in water does not seem to change its physical properties significantly, except that it retains the shape in which it is placed during boiling. Sterilization of the plastic by soaking it in a 1:1,000 aqueous solution of benzalkonium chloride ("zephiran chloride" N. N. R.) for eighteen to twenty-four hours has proved satisfactory, and this method has been used in the experiments reported herein. Since the plastic, either in the form of a tube or a film, is lighter than water, it must be weighted to the bottom of the solution in which it is sterilized, and care must be taken to insure contact between the sterilizing solution and the lumen of the tube, particularly tubes of small caliber.

Polyethylene can be extruded easily in the form of tubes of any convenient size or in sheets of any desirable thickness. Tubes with an outside diameter of 1 mm. and film 0.002 inch (0.005 cm.) thick have been found easy to handle and suitable for surgical procedures (fig. 1). In the form of either tube or film the plastic is inexpensive.

REVIEW OF THE LITERATURE

There have not been any published reports of controlled tissue experiments with polyethylene. Meyers [4] described a method of intravenous catherization using a tubing known as "med-o-seal." [5] Material for this use has been supplied to this laboratory as polyethylene. His paper does not state whether the tubing he actually used was polyethylene or some other plastic material. He reported that the plastic he used produced no foreign body reaction in human tissues; he reported no animal experimentation.

Poppe and De Oliveira [6] investigated methods of obliterating aneurysms by inducing fibrosis around them with irritating plastic film. They used a material called "polythene cellophane," which caused a pronounced fibrous reaction around the aorta in experimental animals. They used the same material in 4 human cases but without sufficiently long follow-up to report results. The exact type of polyethylene used was not recorded.

Diamond and Thomas [7] have used small caliber polyethylene tubing in the treatment of newborn babies with erythroblastosis. They have inserted the tubing through the umbilical vein into the inferior vena cava, leaving the tube in place up to three hours. Through the tubing 450 cc. of the blood of the infant has been withdrawn and replaced by 500 cc. or more of Rh negative blood. No evidence of irritation from the tubing has been seen, and the infants treated in this way have shown immediate improvement.

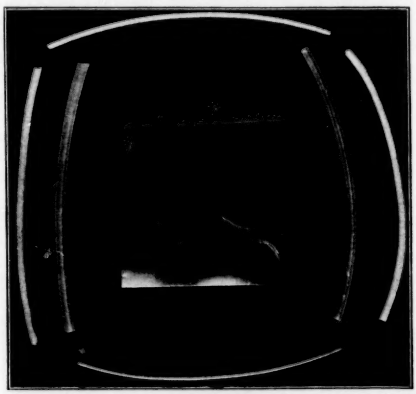

Fig. 1.—Samples of pure polyethylene film and hollow tubing. On the extreme left and the extreme right of the figure are sections of no. 8 F soft rubber catheter for comparison of size. The film is 0.002 inch (0.005 cm.) thick. The tubing can be extruded in any diameter desired.

EXPERIMENTAL DATA

Scope of the Investigation.—Interest in the present investigation was focused principally on the reactions produced by this plastic in the central nervous system and its coverings. Two general groups of experiments were therefore undertaken: (1) implantation of polyethylene directly into the cerebral cortex, and (2) replacement of an area of excised dura with polyethylene film. The experiments were controlled by the performance of similar operative procedures without use of the plastic on the contralateral side in the same animal.

Tissue reactions were studied in 43 cats, 10 dogs, 9 monkeys and 3 rabbits. The animals were killed at scheduled intervals of 5, 7, 10, 14, 21, 30, 60, 90 and 150 days after operation. When animals died of some

4. Meyers, L.: Intravenous Catheterization, Am. J. Nursing **45**: 930-931, 1945.
5. Supplied by A. C. Balfour, Englewood, N. J.
6. Poppe, J. K., and Renault de Oliveira, H.: Treatment of Syphilitic Aneurysms by Cellophane Wrapping, J. Thoracic Surg. **15**: 186-195, 1946.
7. Diamond, L. K., and Thomas, W. O., Jr.: Replacement Transfusions in the Treatment of Severe Erythroblastosis Fetalis by a Single Plastic Catheter in the Umbilical Vein, to be published.

condition not related to the experiments, they were included in this study only if they were free from infection in or near the operative site. None of the animals showed evidence during life of cerebral irritation or of any unusual behavior that could be attributed to the presence of polyethylene.

The animals were killed with an overdose of pentobarbital sodium, the carotid arteries perfused with isotonic solution of sodium chloride followed by 10 per cent solution of formaldehyde; the brains were removed intact and placed in 10 per cent solution of formaldehyde for further fixation. Microscopic sections stained with hematoxylin and eosin were then prepared for detailed study of the histologic responses to the presence of the plastic.

I. *Implantation of Polyethylene into the Brain.*

Segments of polyethylene tubing 3 to 5 mm. in length with an outside diameter of slightly more than 1 mm. were embedded in the parietal lobe of the cerebral hemisphere. This was accomplished through a tiny dural flap exposed through a small bur hole. The tubing, beveled at one end, was introduced into the cerebral tissue perpendicular to the surface. The operative wounds were closed in layers with silk. Similar experiments were performed with polyethylene film wrapped tightly in the form of a cylinder and embedded in the brain perpendicular to the cortex.

At the time these animals were killed the local site of implantation was carefully examined. In none of them was there evidence of any gross reaction around the polyethylene. Both the tubing and the film could be slipped easily out of the location in the cerebral tissue, leaving a discrete round hole without gross distortion of the surrounding tissue.

Fig. 2 (cat 64).—Photomicrograph of cerebral cortex seven days after implantation of polyethylene tubing (hematoxylin and eosin). Note the absence of polymorphonuclear leukocytes or increased vascularity. There is minimal small round cell infiltration, similar to that seen adjacent to a simple stab wound.

Histologic sections through the area of implantation up to ten days showed no more tissue reaction than was found adjacent to a control stab wound elsewhere in the cortex (fig. 2). No collections of polymorphonuclear leukocytes were found in any of the sections. Sections made through implantation sites in experiments lasting more than ten days showed a thin layer of glial tissue and slightly compressed cerebral tissue around the cavity containing the plastic. The glial layer was one to three cells in thickness and increased gradually over the weeks, until at ninety days it was six to eight cells thick. The surrounding cerebral tissue showed no increased vascularity and no inflammatory or foreign body reaction (fig. 3). The thin glial tissue lining the cavity was similar to that seen in response to tantalum, vitallium and methyl methacrylate, all of which have been established as well tolerated by human tissues.[8]

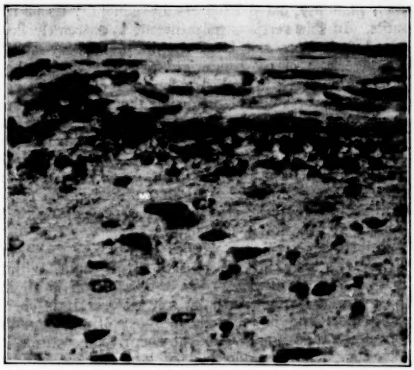

Fig. 3 (cat 66).—High power photomicrograph of the implantation site of polyethylene tubing, which had been placed in the cerebral cortex sixty-five days previously (hematoxylin and eosin). Note the increased thickness of the layer of glial tissue adjacent to the location of the tube. Also note the lack of increased vascularity and the minimal round cell infiltration.

In contrast to polyethylene, brains were examined in which du Pont "Cellophane (PT 300)" had been implanted in a similar manner.[9] The "Cellophane" was adherent to the surrounding tissue and could not be dislodged easily from its bed; there was edema around the implantation site early, with polymorphonuclear leukocytic infiltration. When the acute inflammatory response subsided after ten to twenty days an intense gliosis was evident, which became increasingly dense (fig. 4).

II. *Polyethylene Film Used as Dural Substitute.*

Thirty-two cats were subjected to operations in which polyethylene film 0.002 inch (0.005 cm.) in thickness was used to replace dura. In some instances bone flaps were elevated and replaced; in others a bone defect was created to expose the dura and was covered subsequently only by normal muscle. Difficulty was at first encountered in obtaining the film as pure polyethylene. Film containing antioxidants cannot always

8. Mackenzie, C. M.; Sharpless, D. H., and Millard, P.: Tissue Reactions to Vitallium and Acrylic Implants, Northwest Med. **44**: 277-283, 1945.

9. Page, I. H.: A Method for Producing Persistent Hypertension by Cellophane, Science **89**: 273-274, 1939.

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be differentiated grossly from pure film, and although it cannot be proved that the material used in early experiments was impure, it was observed that when material known to be pure was obtained the experimental results were much more satisfactory.

In earlier experiments, in which film of apparently impure quality was used, in several animals there developed relatively large hematomas between the arachnoid and the film. These were gradually absorbed and replaced by fibrous tissue. In the last 13 cats operated on, pure film was used and no hematomas were encountered except in 1 cat, in which a small hematoma formed under the anterior portion of the film. This development was also observed in 1 monkey, in which a piece of film 4 by 2 cm. was used to cover a large portion of one cerebral hemisphere. The collection of blood under the film measured 1 to 2 mm. in thickness and 1.5 cm. in width. This was not considered significant in view of its small size and the fact that the remainder of the cortex under the film was free of hemorrhage or gross reaction. In this case the presence of the hematoma was attributed to a technical error.

Animals killed in less than ten days showed no gross or microscopic reaction around the film, and the underlying cortex was plainly visible through it (fig. 5). After ten days, it became apparent that the film was being gradually encapsulated by a thin neomembrane on both its inner and outer surfaces. These layers were apparently derived from the dura. The inner surface was generally adherent to the underlying arachnoid by filmy adhesions; these were most pronounced immediately under the silk or nylon sutures used to attach

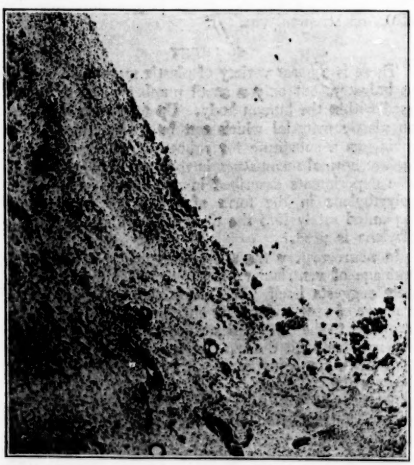

Fig. 4 (cat 74).—Low power photomicrograph of the implantation site of "Cellophane (PT 300)" five days after its introduction into the cerebral cortex (hematoxylin and eosin). Note the widespread infiltration of polymorphonuclear leukocytes and the perivascular cuffs of inflammatory cells. (Compare with fig. 2.)

the film to the dural edges. In animals that were allowed to survive thirty to ninety days, the film was found completely enclosed by a thin nonadherent fibrous envelope, or neomembrane, which contained a minute amount of clear fluid similar to that described in experiments with methyl methacrylate by Beck, Russell, Small and Graham [10] and to that found around thin tantalum foil by Pudenz and Odom.[11]

The underlying cortex showed no abnormalities. There was mild thickening of the arachnoid, and in the early stages microscopic collections of red blood cells in the subarachnoid space, doubtless the result of operative trauma, were sometimes in evidence.

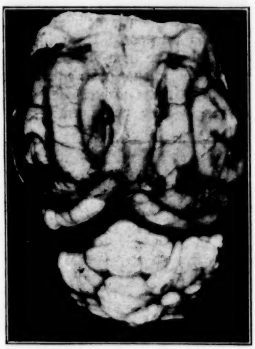

Fig. 5 (cat 95).—Postmortem photograph of polyethylene film which had been in place over the cerebral cortex for six days. Note the lack of gross reaction and the clear visibility of the underlying cortex through the film.

In 11 cats fibrin film was used as a dural substitute over the left cerebral hemisphere, polyethylene film over the right hemisphere. The use of fibrin film as a dural substitute is well known.[12] The degree of reaction to each type of film was about equal. Although the reaction to both polyethylene and fibrin film was found to be slight, in no instance was the cortex underlying the film as free of adhesions as was that under control dural flaps which had been raised and immediately resutured. Occasionally in animals killed up to thirty days, minute collections of fluid could be detected around both dural substitutes. None of the animals killed after the thirty day period showed any such formation of fluid.

In 3 animals polyethylene was placed over damaged cortex replacing the dura. In 1 of these the cortex was damaged by removal of a piece of tantalum screen, which had been in contact with the cortex for one year and had become grossly adherent to it. This animal was killed twenty-one days after the film had been put in place. In the other 2 animals transcortical explorations of the lateral ventricles had been performed. The operative wound was reexplored after three days in 1 animal and after twenty days in the other. There was no gross reaction to the film in the animal explored after three days, and the presence of the artificial dural covering facilitated the reexploration. In the animals studied twenty days after operation there were adhesions to the neomembrane enclosing the polyethylene film similar to those found beneath normal dura in such circumstances.

Systematic experiments have not been performed to determine the effectiveness of polyethylene film in preventing meningocerebral adhesions over damaged cor-

10. Beck, D. J. K.; Russell, D. S.; Small, J. M., and Graham, M. P.: Implantation of Acrylic-Resin Discs in Rabbits' Skulls, Brit. J. Surg. **33**: 83-86, 1945.

11. Pudenz, R. H., and Odom, G. L.: Meningocerebral Adhesions: An Experimental Study of the Effect of Human Amniotic Membrane, Amnioplastic, Beef Allantoic Membrane, Cargile Membrane, Tantalum Foil, and Polyvinyl Alcohol Films, Surgery **12**: 318-344, 1942.

12. Ingraham, F. D., and Bailey, O. T.: The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery: Fibrin Foams as Hemostatic Agents; Fibrin Films in Repair of Dural Defects and in Prevention of Meningocerebral Adhesions, J. Neurosurg. **1**: 23-39, 1944.

tex. The tissue response to this plastic is comparable to that observed by Pudenz and Odom [11] to thin tantalum foil. They noted that tantalum foil became encapsulated by a thin fibrous envelope; the under surface of which was adherent to the cortical cicatrix. They did not consider tantalum ideal for the prevention of meningocerebral adhesions; Delarue, Linell and McKenzie [13] have considered tantalum foil unsuitable for this purpose. It is likely that polyethylene film would behave in a similar manner, and a few preliminary experiments have substantiated this view. Further investigation of polyethylene over traumatized cerebral cortex is now being undertaken.

Fig. 6 (monkey 53).—Photomicrograph of the thin fibrous tissue membrane which formed between the cut surface of bone and polyethylene tube placed in a saw cut in the cranium one hundred and ninety-seven days previously (hematoxylin and eosin). Note the smooth surface of the membrane and the lack of foreign body reaction or new bone formation.

Ingraham, Bailey and Cobb [14] have showed that fibrin film placed over damaged cortex aids in the prevention of meningocerebral adhesions, and it is not anticipated that polyethylene film will replace fibrin film in this application. However, polyethylene film, possessing great pliability, low specific gravity, relative transparency and the ability to hold silk sutures securely, should be superior to either fibrin film or tantalum foil as a dural substitute when a watertight closure of dural defects is required. Polyethylene film is much less expensive than tantalum foil and should be an adequate substitute for it in its other surgical uses, such as in the practice of wrapping the site of a nerve anastomosis.

III. *Other Experiments*

Brief mention is also made of the experimental application of polyethylene film to bone. The film is well tolerated in saw cuts in the skulls of animals and shows no tendency to incite foreign body response. It is surrounded in bone by a thin fibrous tissue membrane (fig. 6). These experiments will be reported in detail in a separate publication. Polyethylene film and tubing have also been used in contact with major blood vessels; they do not cause the formation of fibrous tissue or constriction of the vascular lumen.

Narat and Cipolla,[15] also Huelsebusch, Foter and Gibby,[16] found that certain forms of plastic and rubber tubing caused an inactivation of penicillin. Experiments were therefore conducted to determine the effect of pure polyethylene tubing on penicillin. Samples of polyethylene tubing and rubber tubing were left in contact with penicillin twenty-four hours. The effectiveness of the penicillin solution against a standard strain of hemolytic streptococcus was then tested. The polyethylene tubing did not inactivate the antibiotic, the results being identical with the controls. A sample of rubber tubing inactivated the penicillin 15 to 25 per cent. Studies were not made with streptomycin, since in the experiments of Huelsebusch, Foter and Gibby none of the plastics, no matter how impure, had any effect on streptomycin.

COMMENT

There is a great variety of plastic materials available to industry, but only a small number of these can be used within the human body. Up to the present time, no plastic material which can be formed into pliable tubing as a substitute for rubber or into thin film to replace normal membranes in the body has been found. The experiments described in this report suggest that polyethylene in the form of tubing or film can be implanted safely into the tissues, providing pure polyethylene is used.

In neurosurgery the use of the tubing for constant drainage of ventricular or subarachnoid fluid immediately suggests itself. It should also be useful in the drainage of ventricular fluid into the subarachnoid space according to the method described by Torkildsen.[17] The film may well fill the need of a substitute for normal dura when for some reason the dura cannot be used to cover the cortex.

This paper is intended as a report on the experimental application of this interesting and potentially useful material to neurosurgical practice. It has already been used to a limited extent in human patients with completely satisfactory results. Further animal experimentation and clinical trial will determine its value in other fields of surgery.

13. Delarue, N. C.; Linell, E. A., and McKenzie, K. G.: An Experimental Study on the Use of Tantalum in the Subdural Space, J. Neurosurg. **1**: 239-242, 1944.

14. Ingraham, F. D.; Bailey, O. T., and Cobb, C. A., Jr.: The Use of Fibrin Film as a Dural Substitute and in the Prevention of Meningocerebral Adhesions: Further Studies and Clinical Results, J. A. M. A. **128**: 1088-1091 (Aug. 11) 1945.

15. Narat, J. K., and Cipolla, A. E.: Inactivation of Penicillin by Tubing: Preliminary Report, Am. J. Surg. **71**: 667-668, 1946.

16. Huelsebusch, J. B.; Foter, M. J., and Gibby, I. W.: Effect of Rubber Tubing upon the Stability of Penicillin and Streptomycin Solutions, Science **104**: 479-480, 1946.

17. Torkildsen, A.: A New Palliative Operation in Cases of Inoperable Occlusion of the Sylvanian Aqueduct, Acta chir. Scandinav. **82**: 117-123, 1939.

CONCLUSION

1. Animal experimentation with a new synthetic plastic material, polyethylene ("polythene") in the form of flexible tubing and film has shown it to be well tolerated in animal tissues when used in pure form. There is no foreign body reaction, the tissue response being similar to that seen in the use of tantalum and methyl methacrylate.

2. Polyethylene does not inactivate penicillin.

SIGNIFICANT TRENDS IN CANCER RESEARCH

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Medicine is applied biology. Medical problems, therefore, are fundamentally biologic problems. This includes cancer, which was recognized as belonging in this sphere many years ago by a few pathologists but, curiously enough, remained with little attention on the part of biologists themselves until quite recently.

Until comparatively recently, cancer was studied mostly in its gross pathologic-anatomic aspects. Better microscopes made possible enunciation of the cell doctrine, whereupon cancer was placed in its true category of being a cellular growth and maldevelopment. Even so, few biologists, in whose fields the problems of cellular growth and development are paramount, recognized the relationship to a sufficient degree to work on it. Virchow's dictum that all cells come from preexisting cells led to a persistent search for cellular beginnings, and the literature teems with demonstrations which often were anything but conclusive as to the exact cellular origin of the various types of cancer.

A serious difficulty faced by pathologists in this type of work is lack of sufficient knowledge of the growth and development of normal cells for comparison. The pathologist studies a tumor as of the instant when it is removed and fixed and from this point tries to figure out what happened when the tumor arose and how it progressed while it was still in the patient. The hazards need no emphasis. To prophesy the future of a given tumor on the basis of what it looks like at one fleeting instant of its life is to assume wishfully that all the variables but one are controlled. Most pathologists now realize this. In the last analysis, prognosis as to the fate of a patient with cancer depends not on the type of cancer, its cellular details, behavior of the cancer cells or the name given to it but on whether or not, in its treatment, every last cancer cell has been removed or destroyed. Some surgeons and/or radiologists still refuse to be radical in the presence of a small cancer or of one said to be of low malignancy. A good maxim is "faint heart never cured cancer patient." Of what use otherwise is the propaganda "come early"?

The need and value of comparing malignant growth with the corresponding normal has been generally admitted only since the end of the first world war. In fact, it is now emphasized that the use of biologic technics offers a most fruitful approach to cancer. The programs of the Cancer Research Association of not so many years ago will be remembered. Cancer itself was studied and mostly in its pathologic-anatomic aspects. The occasional biologic paper on growth and development of normal cells was believed to be "interesting though not applicable." The programs of recent years, however, present biologic, chemical and physical papers in the majority. This is a significant trend. Biologists in general now recognize the cancer problem as one to which they can contribute, and workers in cancer research welcome them into the fold. Pathologists, now fully appreciating the need, keep a weather eye open for studies of normal cell behavior as well as continuing their own studies of pathologic cells.

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Read in the General Scientific Meetings at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1947.

THE BIOLOGIC APPROACH

The crucial problems in the biologic approach are the differentiation and organization phases of cellular growth. Cancer cells, while differentiating even to high degrees at times, nevertheless show qualitative anatomic differences from corresponding normal cells. Translate this fact from static to dynamic terms. How does the cancer cell get that way? And translate again from this language to chemical and physical terms. Devise methods of quantitative estimation of degrees of differentiation. How far can a cell normal or cancerous differentiate until it can no longer divide? What potencies remain in cells after some of their original complement has been expressed? What environmental chemical factors govern potencies and with what intracellular substances do they react to form what new substances? What are the qualitative changes when a cancer cell or cells originate? What are the enzyme patterns catalyzing these reactions both in the normal and in that "new" cell that is cancerous; in that cell which has undergone "somatic mutation"; in that cell which is no longer quantitatively different but qualitatively?

A similar set of questions is constructed for the organization problem. Cancer cells do not organize into organs and parts as do normal cells. Here the separated problems of blood supply, nerve supply, organizer substances (Spemann), hormones, function (Wilhelm Roux) enter the picture.

The applications of these problems are not only in such general questions as causation but also in details such as origin, cellular patterns, diagnosis and even nomenclature, which should be changed from the weird and confusing words now used to a more logical and accurate language. For example, instead of saying that a squamous cell carcinoma arises from squamous cells, it should be stated that a squamous cell carcinoma arises from but partially differentiated cells and they differentiate out into squamous-like cells.

Another part of the biologic approach which has helped stimulate biologists but also has medical interest is the recognition that cancer is not confined to human beings but has been found in most multicellular organisms. In addition to the spontaneous tumors studied in horses, dogs, fish, turtles, frogs and mice, botanists have shown that much can be learned from plant tumors. As one clinician said, "At least I can tell patients and their relatives that the fundamental cause of their cancer is not too much worry, or eating food cooked in certain pots, or sleeping with their beds east and west, because fish do not eat tinned food, nor do geraniums worry, and yet they too get cancer."

VIRUSES, GENES, NUCLEOPROTEINS

The discovery by Bittner of the transmissible agent in mammary cancer has forced acceptance of the belief that much more intensive study of viruses and cancer must be done. Clearer chemical characterization of the

transmissible milk agent is being made, and coordination with other virus studies and nucleoproteins brings wide fields into focus. X-rays cause mutations in such organisms as Neurospora, yeasts, paramecia which are correlated with their genes, their nucleoproteins, their nutritional requirements and their intermediary metabolism, all points of departure in cancer research.

NUTRITION AND CANCER

Reduction in caloric intake of about one third reduces the expected incidence of breast cancer in inbred susceptible strains of mice but apparently by indirection, for their ovaries, uteri and breasts were atrophic, suggesting pituitary insufficiency. Reduction in caloric intake reduces also the development of leukemia in methyl cholanthrene-painted mice but not if the calories are largely supplied by fat. Other hints are in the literature concerning fats and carcinogenesis but details await further experiment. Protein restriction also inhibits tumor formation but again by indirection. In brief, nothing specific has been found except for a few substances like dimethyl-amino-azobenzene, which produces cancer of the liver but which are not normal constituents of the diet.

On the other hand, clinical advantage should be taken of the results of general research in nutrition. Patients are better prepared for surgery and/or irradiation by proper attention to diet, and the advanced cancer patient can be made more comfortable.

CARCINOGENS

The story of the carcinogens is a familiar one. Some four hundred compounds are known to produce cancer. There is no general chemical pattern among them. Crucial questions are (1) to find a naturally occurring carcinogen and (2) to characterize the changes in cellular potencies mentioned which are induced by any one of the carcinogens.

Obviously, it is not true to continue saying that we do not know the "cause" of cancer. We know many causes. It depends on what level of language we wish to discuss it.

ISOTOPES

The making available of radioactive and stable isotopes has opened new paths for tracking down the differences between the chemical reactions in cancer and normal tissues by way of their intermediary metabolisms. But to claim that radioactive atoms will eventuate into a "cure" for cancer is somewhat premature. On the other hand, it should not be denied that since such physical agents may produce mutations from the normal to cancer they may do the same for the cancer cell and render it less or perhaps more malignant.

CHEMOTHERAPY

The ideal approach to cancer therapy is to devise measures which will prevent the body from developing an abnormal growth. The next is to devise treatment which will enable the body itself to do away with its malignant growth. Neither surgery nor x-rays and radium fulfil these requirements. Over the years, many substances have been tried, but haphazardly and sporadically. Strangely enough, practically no systematic trials of series of compounds have been made such as resulted in 606 and 914 or as industry tried some 30,000 compounds before a suitable antiknock agent was found for automobiles. Recently, however, groups have been organized along this line. Among compounds tested are the bacterial polysaccharides, colchicine derivatives, nitrogen mustards. Obviously if nothing is tried, nothing will be found. But only those should be used which are justified by experimental results in lower animals. Needless to say, every safeguard must be thrown around patients who are willing for such trials to be made, and they and their relatives must be told of the experimental nature of the procedure. Appraisal of results must be impersonal and objective and only after sufficent time has elapsed.

METHOD OF THINKING—PHILOSOPHY

The foregoing subdivisions by no means exhaust the list; genetics, endocrinology, embryology, statistics and many other subjects contribute to cancer research. Obviously it is necessary to construct an overall picture, not forgetting the clinical aspects. This means there are needed a set of ideas and thoughts; a series of hypotheses; a mode of thinking, so that facts as they come from the various disciplines may be fitted into a rounded whole. This mental exercise is called philosophy, though I fear to use that word. It might hurt the sensibilities of certain scientists who still are not aware of the reconciliation which has occurred during the last half century between science and philosophy. A significant trend in this direction is the fact that within the last six months I was actually asked to speak on the philosophy of cancer.

Is there any doubt that the various facts in cancer should be coordinated, correlated and developed into a whole? Is there any doubt that an integrated program of research should be constructed and definite questions for answer be posed by both clinical and laboratory experiments?

RESEARCH ORGANIZATION

As cancer is fundamentally a biologic problem, a proper research staff must consist of specialists in all subdivisions of biology, among them embryology, genetics, anatomy, biochemistry, biophysics, protozoology, cytology, botany, plus a complete clinical staff. Each group develops its problems and mode of attack within the framework of the overall program adopted. Seminars and conferences keep each informed of the others' results; ideas flow, suggestions emerge, the general program and its separate details are critically examined, altered on justification and thus many angles of the larger problems are attacked.

When the Lankenau Hospital Research Institute was organized in 1925 with a group of specialists to investigate growth and development as fundamental to cancer, the idea received little recognition. Twenty-two years later we break ground for a new building, having outgrown our old quarters and having organized a group called the Institute for Cancer Research. There are a number of other groups now with the same point of view and thus with similar organizations.

SUMMARY

The most significant trends in cancer research are:

1. The recognition that cancer is primarily a biologic problem.

2. The organization of groups (too few as yet for the magnitude of the problem) but at least a few composed of specialists in the most diverse lines of inquiry.

3. The recognition of the need of definite overall programs of research.

Lankenau Hospital.

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1947

Clinical Notes, Suggestions and New Instruments

A CLINICAL TEST FOR MIGRAINE

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A Query and Minor Note in THE JOURNAL, Oct. 26, 1946, page 486, stated that "there is no satisfactory method of experimentally inducing attacks of migraine in persons who are susceptible to them." Since 1940 we have been using a test which we find quite specific in precipitating a migraine headache in persons afflicted with them. This test consists in the use of nitroglycerin sublingually.

Migraine is a distinct type of headache and should be separated from so-called histamine cephalalgia, which can be precipitated by the subcutaneous injection of histamine base according to the method of Horton.[1] It has been fairly well established by Wolff[2] and his co-workers that the basic mechanism of pain in the migraine syndrome is due to the stretching of the cranial arteries, chiefly the extracranial structures (external carotid artery and its branches). This same mechanism obtains in the headache associated with arterial hypertension. Conversely, the headache of histamine cephalalgia, and that associated with fever, is due chiefly to dilatation of the cerebral branches of the internal carotid, the vertebral and the basilar arteries.

In 1938 one of us (M. T. S.) working with Northfield[3] demonstrated that the principal action of histamine in producing headache is on the internal carotid artery and its branches. Similarly, we are accumulating evidence to suggest that the principal effect of nitroglycerin in producing a headache is on the external carotid artery and its branches.

The following may be used as an office procedure in the examination of a patient for headache:

With a history typical of, or strongly suggestive of, migraine headache, the patient is made to rest quietly on the examining table, with a sphygmomanometer cuff in place. It is important that a careful neurologic examination has been made to rule out intracranial pathologic conditions. A headache should not be present when the test is begun; if there is slight headache, the test can still have significance. On the other hand, if a typical headache is present the test usually will not give any added information. Finally, to obviate any psychologic effect, the patient is not told that one is going to attempt to reproduce a headache.

After the blood pressure and resting pulse have been recorded, the patient is given two tablets of 1/100 grain (0.6 mg.) size of nitroglycerin (the hypodermic soluble tablet preferred), which constitutes 1/50 grain (1.3 mg.), under the tongue. (Amyl nitrite does not work as well in reproducing the headache in persons subject to migraine.) In the first two minutes there will be little or no change in the pulse, but the blood pressure may rise slightly in some patients. Between the second and fourth minutes the pulse will rise, the blood pressure will usually drop to below the resting level and the patient will begin to complain of symptoms. Without suggestion, or too direct questioning, the conversation of the next few minutes will usually reveal whether the symptom produced is the same as the headache which constitutes the patient's complaint. The patient may then be asked to compare the sensation produced by the tablets with the headache of his complaint. On rare occasions a patient may develop syncope with this procedure, indicating that the dose was too large. One 1/100 grain (0.6 mg.) tablet is then often sufficient to use in a subsequent test. In the vast majority of cases, however, 1/50 grain (1.3 mg.) appears to be optimum and does not produce any untoward effect.

When a patient's symptom has been localized to one area of the head, as frontal, temporal or occipital, that area will usually be the first to manifest typical pain with the nitroglycerin test. A more generalized headache may follow a few minutes later in some persons.

After the patient has thus been given a headache, it is only right that it be relieved; this can usually be done easily by firm compression of the carotid artery on the involved side for one or two minutes. If that does not give prompt relief the patient may be given 100 per cent oxygen to breathe for five minutes or a solution of 0.5 to 1 mg. ergotamine tartrate intravenously. On the other hand, if the patient is left to rest quietly, with no attempt made to relieve the headache, it will usually disappear spontaneously in ten or fifteen minutes.

Often the production of the headache with the nitroglycerin and its prompt relief by carotid compression are so striking that at this point an obvious psychologic effect comes into play. For the patient now feels that the physician understands the mechanism of the headache.

If the test has reproduced the patient's typical headache, the procedure is stopped at this point. In the event that the nitroglycerin has not reproduced the typical symptoms, the patient is allowed to rest for fifteen minutes and is then given the subcutaneous histamine test according to the method of Horton. If this reproduces the patient's symptom, the diagnosis of histamine cephalalgia is made. He is then given 2 or 3 minims of a 1:300,000 solution of epinephrine intravenously to terminate the attack, and a program of histamine desensitization is outlined. Thus, the entire procedure can be carried out in no longer than thirty minutes if both tests are done, in ten to fifteen minutes if the nitroglycerin test alone is used.

In correlating the results of the nitroglycerin test with (1) a typical history of migraine and (2) the results of treatment for migraine, we have found the test uniformly satisfactory in over 250 cases. To put it in another way, in those cases in which the nitroglycerin test has reproduced the headache, good results have been obtained by treating the patient for migraine. This has consisted chiefly in the administration of 10 grains (0.65 Gm.) of calcium lactate twice a day, the use of a sedative, such as ½ grain (0.03 Gm.) of phenobarbital twice a day, the elimination of allergenic substances when they can be discovered (particularly coffee, chocolate, beans, peanuts and coca-cola) and the use of ergotamine tartrate, 2 to 4 mg. under the tongue, at the onset of an acute attack.

Since pain is entirely a subjective phenomenon, the success of the test lies solely in the ability of the person to identify the headache produced by the nitroglycerin in comparison with his former complaint. This is astonishingly accurate in most patients, particularly in the more intelligent group in which migraine is most prevalent. The nitroglycerin test will not reproduce the headache of a nervous tension state with its dull or binding type of pain due to spasm of the occipitofrontalis muscle. Nor will the nitroglycerin test reproduce the headache of the post-traumatic cerebral contusion syndrome, which is a dull ache with intermittent, sharp, shooting pains situated deeply and usually associated with dizziness. However, the sharp, throbbing pains of the scalp (traumatic migraine) that are localized to the site of an injury along the course of one of the extracranial arteries are usually reproduced accurately by the administration of nitroglycerin, as would be expected. Since most atypical facial neuralgias are of vascular origin, due to distention of the external carotid branches, they are similarly reproduced by the nitroglycerin test. In contrast, true trigeminal neuralgia (tic douloureux) is not precipitated by this procedure.

In summary, we have found that the sublingual administration of nitroglycerin, 1/50 grain (1.3 mg.), in the form of soluble tablets is a highly satisfactory method for the experimental production of migraine headache in persons who are susceptible.

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EPINEPHRINE IN CARDIAC RESUSCITATION

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In the use of epinephrine in cardiac resuscitation evidence is at hand to show that the effective stimulus is not always the needle prick of the heart wall, as has often been asserted but that the epinephrine itself is important. It may be well to mention also the frequency with which dangerous doses of this agent are used.

The technics of cardiac resuscitation continue to offer much material for debate. Arguments for or against the importance of a given practice have not yet been settled by direct observation in man in many instances. In cases in which it is possible to make direct observations it is important to report the evidence.

REPORT OF CASE

The following case illustrates that the needle prick and massage were not adequate to revive a heart that had failed. The injection of epinephrine and massage of the heart proved adequate on two occasions.

A girl aged 4½ years entered the Massachusetts General Hospital with a diagnosis of the tetralogy of Fallot (ventricular septal defect, pulmonary stenosis or atresia, dextraposition of aorta and hypertrophy of the right ventricle). Physical examination revealed that she was poorly nourished and cyanotic, with clubbing of fingers and toes. The veins of the scleras, forehead and distal parts of the extremities were dilated and tortuous. Polycythemia was present (hematocrit reading 69 per cent, arterial oxygen saturation 62 per cent). The heart was enlarged, and a roentgenogram showed the narrow base typical of the tetralogy of Fallot. The electrocardiogram showed axis deviation to the right. No murmurs were heard, and some doubt as to the correctness of the admission diagnosis was expressed. It was decided, however, that the patient deserved surgical exploration.

After the administration of 0.32 mg. atropine as a preanesthetic medicament, nitrous oxide with 20 per cent oxygen was used as a preliminary to ether-oxygen anesthesia with closed respiratory system, which included a "to and fro" carbon dioxide filter. The sequence of events was as follows:

At 8:35 the induction of anesthesia started. At 8:45 the trachea was intubated under direct vision through the mouth. The blood pressure was 90 systolic and 65 diastolic; pulse rate was 168. At 9:20 surgical intervention began. The blood pressure was 90 systolic and 60 diastolic. The pulse rate was 190. At 9:38 the pleura was opened. The anesthetist commented that the patient did not seem to tolerate the open chest well. The surgeon was notified.

At 9:55 the heart suddenly stopped; respiration continued. The heart was massaged. The right auricle was repeatedly stuck with a needle; no spontaneous effect resulted from this type of stimulation.

At 10:25, after thirty minutes of cardiac failure, while life was sustained by cardiac massage, 0.2 cc. of 1:1,000 epinephrine hydrochloride solution diluted in isotonic solution of sodium chloride to 2 cc. (1:10,000 concentration) was injected into the right auricle while massage was continued. The heart immediately showed imperfect beats, and in five minutes it appeared to be beating normally. At 10:30 the operation was resumed. At 10:58 cardiac standstill recurred. Massage of the heart again was carried out without any restoration of spontaneous activity, and the heart wall was stimulated by needle pricks for a twelve minute period. No spontaneous effect resulted from this. At 11:10 epinephrine hydrochloride (same dosage as previously used) was injected into the right auricle with immediate effect on the heart. In a few minutes this led to the reestablishment of an apparently normal rhythm. The right pulmonary artery was exposed and found to be exceedingly small, about 3 mm. in diameter. The right innominate artery was exposed and seen to be decidedly short, about 1 cm. in length. The subclavian artery was freed, and it was planned to use this in the anastomosis. At 11:50 because of the patient's general condition it was decided to carry out the operation in two stages. At the end of the operation the patient's blood pressure was 100 systolic and 60 diastolic; the pulse rate was 160.

Subsequent to the operative procedure the blood pressure fell slowly; the pulse became thready and the respirations gasping. The patient died four hours after operation. Autopsy confirmed the diagnosis of tetralogy of Fallot with pulmonary stenosis, ventricular septal defect, patent foramen ovale, dextraposition of aorta and hypertrophy of the right ventricle.

COMMENT

Twice, after periods of cardiac standstill of thirty and twelve minutes, respectively, epinephrine produced resuscitation of the heart although needle pricks had failed to do so. It is often stated with assurance that the benefit to be derived from cardiac injections is to be explained by the stimulation resulting from the needle prick. In this case the epinephrine appeared to be the effective agent on two occasions after repeated needle pricks had failed.

When epinephrine is employed in cardiac resuscitation, doses that seem to us to be dangerously large (namely, 1 cc. of 1:1,000 solution of epinephrine hydrochloride) are often used, with the hazard of production of ventricular fibrillation. The dose used here was possibly larger than that desirable in a child. In adults who have impaired hearts, and any heart in standstill is at least acutely impaired, it is doubtful if more than 0.2 to 0.3 cc. of 1:1,000 solution of epinephrine hydrochloride ought to be used, and this should be diluted ten times before injection into the right auricle. (This may be introduced by way of the right jugular vein.) Accompanying massage of the heart is probably of great importance. Of course oxygenation should be maintained by artificial respiration with an oxygen-rich atmosphere, and the falling blood pressure should be supported by transfusion.

More case reports of this nature are desirable to add to our accumulated experience concerning this important problem.

ADDENDUM

Since this report was submitted for publication a second case has come to our attention: In the course of a pneumonectomy on a man aged 45 the main bronchus was opened. Shortly after the period of accompanying anoxia the heart failed. Artificial respiration and massage of the heart kept the patient alive. During the subsequent fifty-three minutes the heart was pricked with a needle, procaine was used, and the heart stimulated electrically. Of these, only the latter agency produced a transient series of a few imperfect beats. However, fifty-three minutes after the heart had stopped the dose of epinephrine referred to was injected into the right auricle, with prompt resumption of fairly regular but very weak action. For a brief period the radial pulse became palpable. Twenty minutes later another dose of epinephrine was injected into the heart, with some strengthening of the heart's action. Over the next half hour the heart failed completely and the patient died. All one can say in this case is that the epinephrine appeared to be more effective than the other means used to revive the heart. Whether earlier use would have been more effective one cannot say. Possibly it would.

From the Department of Anesthesia and the West Surgical Service of the Massachusetts General Hospital.

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1947

POISONING DUE TO TINCTURE OF RHUS TOXICODENDRON

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In 1866 Dr. J. W. Moorman of Hardinsburg, Ky.,[1] reported the cases of 2 children who each ate about 1 pint (550 cc.) of the fruit of Rhus toxicodendron, or poison ivy. In a few hours they became drowsy and stuporous, and in a short time vomiting commenced. The vomitus at first consisted of the partially digested fruit, and this was followed by a thick tenacious fluid the color of red wine. Generalized convulsions then appeared accompanied by delirium. The respiratory rate was hurried, the pulse weak and rapid and the pupils dilated. Emesis was induced, and a solution of sodium carbonate was freely administered. Both children recovered. In 1867 there was reported [2] the case of a boy who drank tea made from the root of R. toxicodendron. He became delirious, and there developed nervous twitchings, watery eyes, an intense burning sensation in his stomach and an intolerable cutaneous itching which was accompanied by a measleslike rash and high fever. He recovered. In 1852 a medical student took 1 gill (118 cc.) of a strong concoction of the leaves and vines of R. toxicodendron after supper.[3] The following morning his face was swollen; he slept nearly thirty-six hours. In 1921 [4] Alderson reported fatal results among Indians and Mexicans from eating the leaves of the poison oak plant, Rhus diversiloba.

Since the introduction in recent years of the use of extracts of R. toxicodendron for oral immunization against poisoning due to ivy and sumac there have been many reports of local and systemic reactions.[5] These are (1) local irritations of the skin and mucous membrane which come in direct contact with the extract and (2) generalized pruritus, with or without a rash, especially about the anal region. There have been no reports in the modern literature of toxic reactions approximating those in the cases previously cited.

A major toxic reaction and near tragedy are the subject of this report. These occurred in a patient who presented a most perplexing problem in differential diagnosis.

REPORT OF CASE

History.—J. S., a white boy aged 11, was admitted to the Jewish Hospital at 12:30 a. m. on May 5, 1946 with a chief complaint of headache, nausea and vomiting of twenty-four hours' duration.

Past Medical History.—In 1942 the patient was seen because of a complaint of enuresis. It was noted at that time that he was small for his age and that his speech was slightly slurred. Further investigation revealed a bilateral congenital stricture of the ureterovesical junction. This was associated with a slight hypertension (blood pressure 120 systolic and 80 diastolic) and an elevated blood urea nitrogen (32 mg. per hundred cubic centimeters). Enlargement of the ureteral orifices with the electric knife (Dr. John B. Lownes) was followed by an immediate return of the blood pressure and blood urea nitrogen to normal limits. Within the next six months he grew 2½ inches (6.4 cm.) and his speech cleared. Culture of the urine revealed a nonhemolytic streptococcus, which promptly recurred after chemotherapy. The bacilluria persisted over the years, but there were no local or systemic reactions at any time. The enuresis disappeared. On two occasions the vesicoureteral junctions were dilated under general anesthesia (Dr. Meredith Campbell). The first dilatation on Oct. 8, 1945 was followed on the next day by urticaria that was confined to the region of the face where the anesthestic mask had been secured in place and to the penis where manipulations had occurred. This urticaria was obviously of traumatic origin in a hypersensitive person. The last dilatation was done on April 25, 1946, ten days prior to the onset of the present illness. At that time culture of the urine revealed Bacillus pyocyaneus. At frequent intervals throughout his life there developed on the patient's extremities severe rashes which resembled those of dermatitis venenata due to poison ivy. He complained of itching about the buttocks two weeks before the onset of the present illness, but no cause for it could be determined at that time. Unknown to me until thirty-six hours after his admission to the hospital was the fact that the patient had been taking increasing doses of tincture of R. toxicodendron by mouth at irregular intervals for a period of seven weeks.

History of Present Illness.—At 4 p. m. on May 4, 1946 the patient complained of chills and had a rectal temperature of 105 F. Physical examination at that time revealed questionable impairment to percussion and suppression of breath sounds over the left side of the chest. The patient did not appear seriously ill, and 5 grains (0.32 Gm.) of aspirin (acetylsalicylic acid) was given. Shortly thereafter the temperature fell to 101 F., and the decline was accompanied by profuse perspiration. At 8 p. m. the temperature again rose to 105 F., and physical examination revealed no change. Sulfonamide compounds were ordered in full dosage, and additional acetylsalicylic acid was administered. The temperature promptly subsided, but at 11:30 p. m. the patient vomited a wine-colored material and experienced another chill, with a rise in temperature to 106 F. He was sent to the hospital in an ambulance and had a rectal temperature of 101 F. on admission one hour later.

Course in Hospital.—Physical examination on admission revealed a white boy of about the stated age who was in no acute distress. He was intelligent for his age and extremely cooperative. There were no rashes, but a slight bluish mottling was noticeable over the entire cutaneous area. There was no evidence of twitching or other outward manifestations of a neurologic disturbance. Examination of the eyes, ears, nose and throat revealed essentially normal conditions. There was questionable impairment of the left side of the chest to percussion and suppression of the breath sounds in that area. The heart was normal except for the rate, which was 110 at the apex. The abdomen presented no masses or enlarged organs. The genitalia were normal, as were the extremities. There were no glandular symptoms. Neurologic examination was completely normal. A working diagnosis of pneumonitis involving the left side of the chest was made.

Because of the capricious fever and the suggestion of an imminent state of shock a continuous venoclysis of 5 per cent dextrose in isotonic solution of sodium chloride was immediately begun. Penicillin, 30,000 units, was given subcutaneously.

At 2 a. m. the patient was resting comfortably. The temperature was 103 F., but the pulse rate was 160. At 2:30 a. m. there suddenly developed a chill, which was shortly followed by a generalized clonic convulsion. At 3 a. m. the temperature was 107 F. The convulsive seizures were continuous and were accompanied by severe vomiting. The vomitus was wine colored. At 3:30 a. m. the temperature was 109.2 F., the pulse rate 160 and the respiratory rate 64.

Ice packs were immediately applied. Continuous oxygen with the B. L. B. face mask was administered. Other emergency measures included gastric lavage with sodium bicarbonate, the administration of adrenal cortex, 5 cc. intramuscularly; phenobarbital, 3 grains (0.19 Gm.) intravenously; paraldehyde, 10 cc. intramuscularly, calcium gluconate 10 per cent, 10 cc. intravenously, and caffeine sodium benzoate, 7½ grains (0.48 Gm.) subcutaneously. The continuous venoclysis was discontinued with the onset of the first chill because of the possibility of pyrogens, but the extreme shock made it imperative to immediately start another.

At 4 a. m. the temperature was 105.4 F., the pulse too weak and irregular to count. The blood pressure was likewise unobtainable. At 5 a. m. the temperature was 104 F., the pulse rate 170 and the respiratory rate 72. At 7 a. m. the temperature was 104.8 F., the pulse rate 132 and the respiratory rate 60.

From the Jewish Hospital.

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4. Alderson, H. E.: Fatal Results Among Indians and Mexicans from Eating Leaves of Poison Oak Plant, California State J. Med. **19**: 188, 1921.

Following the administration of paraldehyde the convulsions ceased (about 5 a. m.) and the extremities were spastic. Respirations remained labored, and the oxygen and face mask was discontinued, as it was considered that the patient was rebreathing an excessive amount of carbon dioxide and there was no severe cyanosis. This was rewarded with an improvement in the respiratory rate. During this period musical rales were heard throughout the chest and the breath sounds were suggestive of an asthmatic type of breathing.

Because of the history of infection of the urinary tract and retrograde pyelography ten days before admission, it was thought that the entire clinical state of the patient could be caused by an acute form of pyelonephritis with septicemia. For this the patient was given massive doses of penicillin by all parenteral routes and 40 grains (2.59 Gm.) of sulfadiazine sodium intramuscularly. With the knowledge that B. pyocyaneus had been present in the urine, streptomycin was obtained and 100,000 units was given every three hours. The administration of adrenal cortex was repeated every few hours because of the possibility of a Waterhouse-Friderichsen syndrome and the vasomotor collapse.

Laboratory Data

Urine

	pH	Albumin	Sugar	Acetone	White Blood Cells	Red Blood Cells	Culture
5/ 5/46	5	+2	Trace	Neg.	5 to 7	Occ.	
5/10/46	6	Neg.	Neg.	Neg.	4 to 5	4 to 5	
5/ 7/46	..	.....	.....	.....	.....	.....	B. pyocyaneus
5/14/46	..	.....	.....	.....	.....	.....	No growth
5/13/46	..	.....	.....	.....	.....	.....	No growth
5/24/46	..	.....	.....	.....	.....	.....	No growth

Blood

	Hb. Gm.	Red Cells, Millions	White Cells, 1,000's	Polymorphonuclears, %	Monocytes, %	Lymphocytes, %	Culture
5/ 4/46	....	....	....	..	..	..	No growth in 30 days
5/ 5/46	....	....	....	..	..	..	No growth in 30 days
(9 a.m.)	18.5	5.59	18.3	82	1	17	
(3 p.m.)	15.5	4.39	11.1	83	2	15	
5/ 7/46	16	5.00	15.5	80	1	19	
5/11/46	16	5.16	11.0	59	1	40	

	Urea Nitrogen, Mg./100 Cc.	Sugar, Mg./100 Cc.	CO_2, Vol. %
5/ 5/46	23	..	..
(7 a.m.)	..	..	37
(3:30 p.m.)	..	..	41
5/10/46	12	95	..

Spinal Fluid

Pressure, 30 mm. H_2O

5/5/6 4 white blood cells, few red blood cells

Protein ..... 10 mg./100 cc.
Sugar ..... 10.4 mg./100 cc.
Chlorides ..... 802 mg./100 cc.
Colloidal gold 1111100000
Culture ..... No growth 48 hrs.
Wassermann test ..... Negative

Stool Culture

B. coli

Roentgenogram

5/8/46 Portable chest: increased pulmonic markings of vascular origin; otherwise negative

Electrocardiogram

5/8/46 Sinus arrhythmia

The patient's condition remained extremely critical for the next forty-eight hours. At 10:15 a. m. on May 5, 1946 his respirations ceased. Artificial respirations were immediately begun, and 1.5 cc. of nikethamide was given intramuscularly. The respiratory rhythm was restored; it remained irregular for about a half hour and gradually returned to an even rate of about 60 per minute. At 2 p. m. 350 cc. of whole citrated blood was given slowly by the intravenous route. The patient reacted well to this procedure, and an additional 250 cc. was given at 6 p. m. The temperature remained between 103 and 104 F., gradually subsiding to 101 F. at midnight on May 5, 1946. At this time the pulse rate was 140 and the respiratory rate 38. The blood pressure was 110 systolic and 66 diastolic.

For the ensuing forty-eight hours the temperature, pulse rate and respiratory rate slowly returned to normal. The patient was in a deep stupor, but he could be aroused and would attempt to follow simple commands. He was able to swallow water but was incontinent of urine and feces. His general condition improved rapidly and the spasticity of his extremities disappeared, but he retained evidence of damage to the central nervous system, as described in the neurologic report:

Neurologic Examination.—Neurological examination by Dr. Bernard Alpers on May 9, 1946 revealed the following: The boy was alert and responsive. There was two-thirds ptosis of both eyelids. The pupils were slightly dilated and reacted promptly to light over a small arc. The optic nerves were well defined and had good color. The retinal vessels looked healthy. The patient had complete paralysis of upward gaze and of near convergence. He rotated the eyeballs horizontally but the range did not come out to either the inner or outer canthus completely. The corneal reflexes were decreased. There was weakness of the orbicularis palpebrarum and probably some weakness of the muscles of facial expression. The tongue protruded in the midline.

The patient had feeble handgrips but good power of the arms and the right leg. The left leg was weak. The finger-nose test was carried out slowly and fell short of the goal bilaterally. The heel-knee test was not carried out. There was no dyssynergia. The biceps, triceps and radial reflexes were not obtained. The patellar and achilles reflexes were decreased. The abdominal reflexes were absent. There were no pathologic reflexes. Pain position and vibration senses were normal.

The impression was gained that this boy had paralysis of upward gaze, near convergence and decreased power of the left leg. In addition he had decreased corneal reflexes and absent arm reflexes. He had evidence of a lesion in the superior collicular, periaqueductal and hypothalamic region. It was believed that he had a hemorrhagic encephalitis and an encephalopathic condition associated with intoxication due to R. toxicodendron. It was not believed that he had an infectious focus of encephalitis. His condition was considered compatible with recovery.

The patient underwent a transient change in personality, the return of which to normal was accompanied by an amazingly rapid and complete recovery of the use of all his ocular muscles. The weakness of the left leg similarly disappeared. On May 21, 1946 he was discharged, completely cured.

COMMENT

During the first thirty-six hours of the patient's illness the cause of the dramatic course of events was obscure. On the basis of the history of congenital defect of the urinary tract, chronic bacilluria and surgical manipulation ten days prior to the onset of symptoms a diagnosis of acute septicemia seemed justifiable, and treatment was mainly directed toward the cure of this disease. However, the wine-colored vomitus, extreme hyperpyrexia and manifestations of involvement of the central nervous system were not satisfactorily explained. The mystery was deepened when the blood and spinal fluid cultures were reported negative. The parents were carefully questioned, and it was then discovered that the boy had been taking increasing doses of tincture of R. toxicodendron by mouth. After his recovery the patient volunteered the information that he would forget to take the drops for a few days but add the drops for the missing days to the succeeding dose. The last dose, the day before this illness, was 57 drops (about 3.5 cc.). The maximum dose recommended on the manufacturer's label for adults is 5 drops three times daily in half a glass of water. The patient stated that he used only a little water to get it over with quickly. There had been an interval of ten days without drops, and the dose was stepped up by the patient from 45 to 55, 56 and 57 drops on successive days just prior to his admission.

Several dermatologists familiar with the use of this drug and the manufacturers were consulted, and they were not familiar with any patients with a similar response. However, all other possible etiologic factors were eliminated, and knowing this boy's extreme hypersensitivity I cannot help but be convinced that the drug was the sole cause of this remarkable episode. In retrospect it must be admitted that the pruritus of which the patient began to complain two weeks prior to the onset was in fact a mild toxic reaction to the drug. The patient then desisted from taking the drops for about ten days, following which he resumed the medicament at a comparably higher

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dosage. For thirty-six hours prior to the onset of fever the patient complained of nausea, which undoubtedly was due to gastritis. This became hemorrhagic, which explains the wine-colored vomitus. The subsequent neurologic evidence of damage in the periaqueductal region denotes either a direct effect of the toxin in this area, which involved the temperature control center, or an allergic outpouring, which produced the same result as that described by Kennedy. The complete recovery of the patient is a point in favor of the latter mechanism. The asthmatic type of breathing and the evidence of pulmonary edema are also consistent with an acute allergic reaction.

Urushiol is the active chemical factor common to ivy, sumac and lacquer trees. Stevens [5a] has stated that standardization of extracts can only be approximated because urushiol has not been obtained as a uniform product by the various methods of extraction. In addition Goldman [6] has stated that the definition of the correct dose in the use of tincture of R. toxicodendron is difficult because of varying sensitivity among different persons. He obtained cutaneous reactions or pruritus in 16 of 18 children who took an initial dose of 3 drops of the tincture a day.

NOTE.—Since his recovery the patient has experienced two severe attacks of dermatitis venenata due to poison ivy.

SUMMARY

1. A case of poisoning from an overdose of tincture of Rhus toxicodendron is reported in a boy aged 11. There developed a temperature of 109.2 F., gastritis and damage to the central nervous system. Recovery was eventually complete.

2. Extreme caution should be exercised in the administration of tincture of Rhus toxicodendron by mouth.

PARALYSIS OF THE BLADDER IN POLIOMYELITIS

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Since we are now entering a new season of increased incidence of poliomyelitis, this preliminary report is being made regarding the use of furfuryl trimethylammonium iodide ("furmethide") for one of the complications of this disease, paralysis of the bladder. The bladder is involved in 10 to 20 per cent of all patients with poliomyelitis, with more involvement in adults than in children. Usually this is manifested by distention and inability to void, but overflow dribbling may occur, and occasionally there may be hyperirritability of the vesical neck with frequency and dysuria. This disability may be overcome in some patients with the aid of hot applications to the area of the bladder and other nonspecific measures. However, many patients need to be catheterized one or more times before spontaneous voiding reappears, although eventually all do recover.

During the 1944 poliomyelitis epidemic in North Carolina we were again impressed with the desirability of trying to avoid catheterization in patients with poliomyelitis. An attempt to cause emptying of the bladder by the use of parasympathetic stimulation was therefore tried. Neostigmine methylsulfate, physostigmine salicylate and acetyl-beta-methylcholine chloride ("mecholyl chloride") may be used for this purpose, but usually the effect of these drugs on the bladder is not apparent before other troublesome side effects become evident. For this reason we chose furfuryltrimethylammoniumiodide [1] a new parasympatheticomimetic drug with particular action on the bladder.[2]

The results with this drug are illustrated in the following 2 case reports of 2 of the patients treated in this series.[3]

REPORT OF CASES

CASE 1.—J. M., a boy aged 5½ years, was admitted to the Hickory (North Carolina) Emergency Polio Hospital on June 26, 1944 with typical signs of poliomyelitis. The onset of the illness was five days before admission, characterized by fever and sore throat. Lumbar puncture three days before admission revealed 110 white cells, the type not known. On the day of admission paralysis of the legs and difficulty in voiding were noticed. On admission there was found decided stiffness of the neck and back, moderate weakness of the right leg and pronounced weakness of the left leg. Shortly after admission treatment of the muscular spasm with hot packs was started. The child voided three times during the first day, but the bladder never emptied.

When first seen by one of us on the next day (six days after onset) he had not voided for nine hours, and the bladder reached the umbilicus. Attempts to make him void by hot applications and suprapubic pressure were unsuccessful. At this time 2 mg. (0.4 cc.) of furfuryl trimethylammonium iodide were given subcutaneously. In three minutes the bladder was noted to be contracting, and immediately thereafter the child voided approximately 420 cc. of urine. Four hours later he was given 5 mg. of the drug by mouth and voided again. There was no further difficulty with voiding.

CASE 2.—S. M., a boy aged 22 months, who weighed 25 pounds (11.3 Kg.) was admitted to the pediatric service of the North Carolina Baptist Hospital on March 1, 1947. The onset of his illness began four days before admission and was characterized by fever, irritability and general malaise. The day before admission he was noticed to be limping. On admission he was moderately ill, his neck and back were stiff and his right leg was weak.

Lumbar puncture revealed a slight increase of pressure, a negative Pandy test, 1 polymorphonuclear leukocyte and 29 mononuclear leukocytes. He had voided freely before admission and once after admission, but on the second day he had been unable to void for thirteen hours, and his bladder became distended to the umbilicus. At this time he was given 1.5 mg. (0.3 cc.) of furfuryl trimethylammonium iodide subcutaneously without the occurrence of voiding or other parasympathetic manifestations. Two hours later he was given 2.5 mg. (0.5 cc.) of the drug subcutaneously. Within five minutes he voided 345 cc. Four hours later, his bladder was again distended and he could not void. Approximately five minutes after he received 2.5 mg. (0.5 cc.) of the compound subcutaneously he again voided approximately 300 cc. The following day he voided spontaneously. He had no further trouble voiding.

Subcutaneous Dosage of Furmethide

Age of Patient	Dose
0 to 4 yrs.	1.25 to 2.5 mg.
5 to 9 yrs.	2.00 to 3.0 mg.
10 to 14 yrs.	2.50 to 5.0 mg.
15 to 19 yrs.	2.50 to 5.0 mg.
Over 20 yrs.	5.00 to 7.0 mg.

COMMENT

Twenty-five patients with paralysis of the bladder from poliomyelitis have been treated with furfuryl trimethylammonium iodide subcutaneously with complete voiding in less than fifteen minutes in over 70 per cent of the cases. Most of the failures occurred early in this study and can be explained on the basis of inadequate dosage or previous repeated catheterizations.

This drug is available in ampules containing 5 mg. per cubic centimeter for subcutaneous use. The tentative dosage schedule we are using is shown in the accompanying table. The smaller dose should be given initially in order to avoid overdosage. If voiding, flushing or sweating do not follow the subcutaneous administration of the smaller dose, the larger dose may be given

5. (*a*) Stevens, F. A.: Status of Poison Ivy Extracts, J. A. M. A. **127**: 912 (April 7) 1945. (*b*) Goldman, L.: Reactions Following the Therapeutic Use of Poison Ivy Antigen, J. Med. **20**: 294 (Sept.) 1939.

6. Goldman, L.: Oral Prophylaxis of Poison Ivy Dermatitis in Children, Am. J. Dis. Child. **63**: 241 (Aug.) 1942.

From the Departments of Pediatrics and Urology of the Bowman Gray School of Medicine of Wake Forest College and the Pediatric Service of the North Carolina Baptist Hospital.

1. The "furmethide" used in this study was supplied by Smith, Kline & French Laboratories, Philadelphia.

2. Fellows, E. J., and Livingston, A. E.: Pharmacology of Certain Furfuryl and Tetrahydro-Furfuryl Ammonium Iodides, J. Pharmacol. & Exper. Therap. **68**: 231-246 (Feb.) 1940. Beaser, S. H.; Lipton, J. H., and Altschule, M. D.: Further Experience with Furfuryl-Trimethyl Ammonium Iodide (Furmethide) in the Treatment of Urinary Retention Due to Bladder Atony, Am. J. M. Sc. **206**: 490-497 (Oct.) 1943.

3. We wish to express our appreciation to Dr. John S. Gaul, Medical Director of the Hickory Emergency Polio Hospital, for the cooperation of the members of his staff in this study.

in thirty to sixty minutes (as in case 2). Minor unpleasant side effects of this drug are sweating and feelings of chilliness. One or both of these occurred in 5 of our patients, but none of these was alarming. Severe effects which might follow overdoses of the drug are lacrimation, salivation, prostration and dyspnea. These effects can be easily corrected by the subcutaneous administration of atropine.

Furfuryl trimethylammonium iodide is also available in tablet form for oral use, which requires about four times the subcutaneous dose to effect emptying of the bladder, but the drug is not as dependable by this route. Further studies are being made on the oral use of this agent and will be reported in a more comprehensive report at a later date.

SUMMARY

By the use of furfuryl trimethylammonium iodide ("furmethide"), a new parasympathetic stimulating drug, catheterization can be avoided in most patients with paralysis of the bladder from poliomyelitis.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

TISSUE REACTIONS FROM ANTIGENS

The Council has adopted the following report for publication. In expressing appreciation to Dr. Ehrich for his excellent paper, the Council desires to emphasize certain points for consideration, relating to a discussion of adverse effects following the introduction of foreign antigens into the body, namely: local antibody formation; local damage; inflammatory proliferation; amelioration by the lessening of rapid spread; freedom from bias in the determination of optimal dosage; and the danger of hypersusceptibility. Observance of these and other factors is necessary for attainment of the proper use of antigens and for stimulation of constant research toward new ideas and continued advance in therapeutics. AUSTIN SMITH, M.D., *Secretary.*

THE SIGNIFICANCE OF THE TISSUE REACTIONS CAUSED BY ANTIGENS

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With the introduction of polyvalent vaccines into medicine, the question has been raised whether or not it is safe or profitable to prescribe such vaccines. As antigens are not inert, large quantities of bacterial cells may be expected to have damaging effects. Where is the borderline of safety? Also of concern is the question whether the simultaneous introduction of several antigens produces the same degree of protection per antigen as the isolated administration of these antigens at different times. In brief, what is the optimal procedure of administering antigens? As this is an important question, I was glad to fill the request of the Council on Pharmacy and Chemistry to undertake an inquiry into certain experimental evidence involved in this problem, with special consideration of the various mesenchymal reactions that may be caused by antigens.

The introduction of an antigen into a tissue causes, as is generally known, an inflammatory reaction. Depending on the nature of the antigen and the immunologic status of the host, the reaction at the site of injection may be dominated by the presence of granulocytes or macrophages or both, or lymphocytes and plasma cells may be the predominating elements. While these changes take their course, antigenic material is carried through the afferent lymphatic vessels to the regional lymph node, where at first it causes accumulation of granulocytes or macrophages, or both, but soon produces decided proliferation of lymphocytes and possibly also of plasma cells; the lymphocytes are subsequently carried through the efferent lymphatic vessel via the thoracic duct into the general circulation.

The significance of these phenomena now appears to be clear. The granulocytes and macrophages phagocytize and digest formed antigenic material. One to two days after the injection of bacteria large quantities of dissolved antigen can be demonstrated locally in the tissue and in the efferent lymphatic vessel.[1] The reaction in the lymph node, on the other hand, is associated with the production of antibody; this begins to appear here on the third or fourth day and reaches its highest concentration on the sixth or seventh day after injection of the antigen;[2] at the place of injection, antibody titers remain low. These various observations indicate that the proliferation of lymphocytes and possibly also of plasma cells in the regional lymph node are morphologic expressions of good antibody response.

It is common knowledge that an inflammation may lead to hemorrhage, necrosis, suppuration or other undesirable changes locally or in the regional lymph node. Where precisely to draw the line between safety and damage, however, is not certain. There may be considerable overlapping of these two effects. It would be desirable to know which reactions are safe or profitable locally and in the regional lymph node. This may now be determined by injecting various doses of various antigens into the foot pads of rabbits and by comparing antibody production in the popliteal lymph node with the morphologic changes here and in the foot pad.

Though the local phenomena are probably the most important mesenchymal reactions that are encountered in the immunization of human subjects, there may be general reactions of the vascular connective tissue as well. The latter are most prominent after intravenous injections, but they have been observed also after intraperitoneal and subcutaneous injections, particularly of antigens that cause necrosis locally or in the regional lymph node.[3] The appearance of general mesenchymal reactions, if caused by subcutaneous injection, may be regarded as a delicate indicator of insufficiency of the local defense mechanism.[4] As these reactions are little known generally, though an important part of the phenomena under discussion here, they will be presented in detail.

General mesenchymal reactions, i. e., general reactions of the vascular connective tissue due to intravenous introduction of antigens, were first recognized by Oeller and Siegmund in 1922. In his first papers[5]

Professor of Histology, Graduate School of Medicine, University of Pennsylvania; Chief, Division of Pathology, Philadelphia General Hospital.

1. Harris, T. N., and Ehrich, W. E.: The Fate of Injected Particulate Antigens in Relation to the Formation of Antibodies, J. Exper. Med. **84**: 157, 1946.
2. McMaster, P. D., and Hudack, S. S.: The Formation of Agglutinins Within Lymph Nodes, J. Exper. Med. **61**: 783, 1935. Ehrich, W. E., and Harris, T. N.: The Formation of Antibodies in the Popliteal Lymph Node in Rabbits, ibid. **76**: 335, 1942.
3. Ehrich, W. E.; Harris, T. N., and Mertens, E.: The Absence of Antibody in the Macrophages During Maximum Antibody Formation, J. Exper. Med. **83**: 373, 1946.
4. Ehrich, W. E.; Halbert, S. P.; Mertens, E., and Mudd, S.: Mechanism of the Augmenting Action of Mineral Oil on Antibody Production, J. Exper. Med. **82**: 343, 1945.
5. Oeller, H.: Ueber die Bedeutung der Zellfunktion bei Immunitätsvorgängen, Deutsche med. Wchnschr. **49**: 1287, 1923; Ueber die Bedeutung reaktiv "entzuendlicher Vorgaenge" bei bakterieller Allgemeininfection, ibid. **357**, 1924; Zur Histopathologie der haematogenen Infektion mit pathogenen und apathogenen Bakterien, ibid., 1924, p. 937.

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Oeller described phagocytosis of the injected material by both the reticuloendothelial cells of liver and spleen and the common endothelial cells, particularly of the capillaries of the lungs, with simultaneous transformation of the latter into polymorphonuclear and other leukocytes. These changes were called "endothelial reaction." Later (1925) he [6] described an "adventitial-endothelial reaction" or "general inflammation of the vessel wall" as occurring simultaneously with the endothelial reaction, which was characterized by enormous "lymphoid-plasma cellular transformation" of the vascular connective tissue. There was pronounced cuffing of the blood vessels particularly in lungs, liver and spleen with "very basophilic lymphoid cells with large, clear, round, spindle-shaped or oval nuclei." The lungs also showed "enormous proliferation of the adventitial cells of the capillaries causing thickening of the alveolar septa" and in some animals "enormous proliferation of endothelium, resembling endarteritis and endophlebitis." If the antigen was in solution the first (endothelial) reaction did not develop. While the first reaction reached its peak five to ten minutes after injection, the second reaction did so in thirty to sixty minutes. After twenty-four hours both had disappeared.

As to the nature of the adventitial-endothelial reaction, Oeller believed that the large basophilic lymphoid cells "assumed the shape of lymphocytes." "The lymphoid-plasma cellular reaction showed a specific tendency to differentiate into lymphocytes." As this occurred at the same time as the injected erythrocytes underwent hemolysis, and since the injection of dissolved hemoglobin caused no endothelial reaction but only the production of lymphocytes and plasma cells, he concluded that these cells possibly ingested and metabolized dissolved antigen in a fashion similar to that in which phagocytes handled corpuscular matter.

Siegmund [7] could not confirm Oeller's theory of endothelial reaction but explained it as confusion with phagocytosis of granulocytes by macrophages. However, he also described two different reactions, namely, (1) lymphoid-plasma cellular proliferations resembling Oeller's endothelial-adventitial reaction and (2) changes in the intima of blood vessels which he called "intima granulomas." In highly immunized animals he observed "organoid structures in the adventitial tissue" consisting of hemopoietic parenchyma developing into the direction of lymphatic-plasma cellular as well as myeloid elements." The basophilic cells in the septums of the lungs were interpreted as "hemocytoblasts arising from endothelial and adventitial elements." After injection of proteins Siegmund found a preponderance of lymphocytes; after injection of iron, myeloid-erythroplastic elements.

Siegmund's "intima granulomas" were found in animals that had received massive doses of living colon bacilli (Escherichia coli) intravenously. They were also found in human beings that had died from septicemia. As these were later identified as organized thrombi,[8] they should not be included among the reactions under discussion here.

The lymphoid-plasma cellular reactions of Oeller and Siegmund were soon confirmed, notably by Domagk [9] and Victor Schilling.[10] The latter also observed a decided reaction of the lymphatic apparatus in the spleen and elsewhere with the formation of large secondary nodules with many mitotic figures. However, the rapid transformation of endothelial or adventitial cells into polymorphonuclear leukocytes described by Oeller and Siegmund could not be substantiated; the appearance of granulocytes in the lungs was found to be caused entirely by emigration of these cells from the circulating blood (Schilling).

If in spite of these and other confirmations the general vascular reactions which follow the intravenous introduction of antigen were not generally recognized, this was probably due to the skeptical views of Aschoff and Roesle and their pupils, who held such prominent positions in Germany at that time. It has been pointed out elsewhere [11] that the failure by Seemann, Ewald, Gerlach and others to reproduce these reactions was due to inadequate experimentation (improper dosage of antigen, inadequate time intervals and unsuitable animals). In part, however, it was conditioned by the descriptions of Oeller and Siegmund which were not altogether clear; in fact, a good many of the doses and time intervals given by these authors indicate that in some of their animals the reaction described by them must have existed before the antigen was introduced. Nevertheless, to Oeller and Siegmund goes the credit for having been first to recognize these reactions; they were pioneers in the study of phenomena whose significance is fully realized only now.

The study of the general mesenchymal reactions after the intravenous introduction of antigens received new impetus only in 1929 and 1930, when Ehrich,[12] Epstein [13] and Nye and Parker [14] published their observations. It was shown [12] that the degree and character of the reactions depended much on the dosage of the antigen employed. Repeated intravenous injections of rabbits with 1 to 5 cc. of twenty hour whole broth cultures of Staphylococcus aureus that had been killed by heating for two hours at 60 C. caused only moderate reactions, while injections of the sediment of 40 to 60 cc. of cultures caused enormous reactions, particularly in lungs, liver and spleen. After small doses lymphocytes and plasma cells predominated; after large doses histiocytes and reticuloendothelial elements were the outstanding cells, and there were numerous giant cells of Langhans type. In the rabbits there also developed hyperplasia of the thymus, the lymph nodes and the malpighian bodies of the spleen. The hyperplasia of the thymus was preceded by a drop in weight of this organ even when small doses were given. The latter observation is of considerable interest in view

6. Oeller, H.: Experimentelle Studien zur pathologischen Physiologie des Mesenchyms und seiner Stoffwechselleistungen bei Infektionen, Krankheitsforschung **1:** 28, 1925.

7. Siegmund, H.: Untersuchungen ueber immunitaet und Entzuendung, Verhandl. d. deutsch. path. Gesellsch. **19:** 114, 1923; Ueber einige Reaktione der Gefässwaende und des Endocards bei experimenteller und menschlicher Allgemeininfektion, ibid. **20:** 260, 1925.

8. Ewald, W.: Zur Morphologie der Immunitätsreaktionen mit besonderer Berucksichtigung des Gefässendothels, Beitr. z. path. Anat. u. z. allg. Path. **83:** 681, 1930.

9. Domagk, G.: Untersuchungen über die Bedeutung des retikuloendothelialen Systems für die Vernichtung von Infektionserregern und für die Entstehung des Amyloids, Virchows Arch. f. path. Anat. **253:** 594, 1924; Pathologisch-anatomische Beobachtungen bei der Anaphylaxie, Verhandl. d. deutsch. path. Gesellsch. **20:** 280, 1925.

10. Schilling, V.: Das Knoechenmark als Organ: III. Funktion des Mark parenchyms und Leukozytose, Deutsche med. Wchnschr. **51:** 516, 1925.

11. Ehrich, W. E., and Wohlrab, R.: I. Ueber die Reaktionen des Gefässbindegewebsapparates auf intravenose Staphylokokkeninjektionen und ihre Bedeutung, Beitr. z. path. Anat. u. z. allg. Path. **93:** 321, 1934.

12. Ehrich, W. E.: Experimental Studies of the Effect of the Intravenous Injection of Killed Staphylococci on the Behaviour of Lymphatic Tissue, Thymus, and the Vascular Connective Tissue, J. Exper. Med. **49:** 361, 1929.

13. Epstein, E.: Beitrag zur Theorie und Morphologie der Immunität, Virchows Arch. f. path. Anat. **273:** 89, 1929.

14. Nye, R. N., and Parker, F.: Tissue Reactions in Rabbits Following Intravenous Injections of Bacteria, Am. J. Path. **6:** 38, 1930.

of modern research on the so-called alarm reaction [15] and on globulin production. Research in progress (with Dr. Joseph Seifter) indicates that the weight of the thymus is one of the finest indicators of the alarm reaction, suggesting that even the small doses of Staphylococcus vaccine used in our study were not without toxic effect. As the reactions occurred immediately after the first injection of the antigen, it was concluded that they were not allergic in nature, as claimed by Oeller and Siegmund, but were primary reactions of the mesenchyma to the bacteria or their products. As the animals that received large doses manifested enormous reactions but showed much smaller agglutinin concentrations than those which received small doses and had minor reactions, it was felt that the reactions of the vascular connective tissue denoted damage rather than antibody production.

In publications with Wohlrab and Voigt [16] it was shown that after the intravenous injection of the centrifugate of 45 to 70 cc. per kilogram of body weight of killed broth culture of Staph. aureus, true plasma cells with eccentric nucleus and a light vacuole in the cytoplasm were comparatively rare in lungs and liver, though more frequent in the pulp of the spleen; the predominating cells were first small and large lymphocytes and possibly monoblasts and later histiocytes and reticuloendothelial cells. Of 28 rabbits receiving these doses once a week for four weeks, 22 showed agglutinin titers under 1:1,000, 2 revealed titers between 1:1,000 and 1:2,000 and 4 showed titers larger than 1:2,000. On the other hand, of 10 rabbits which received small doses six times every fortnight for six weeks, 5 showed titers between 1:5,000 and 1:7,000 and 5 larger than 1:10,000. From these facts it was concluded that the reactions observed were not immune reactions but were merely expressions of a pathologic defense reaction (excessive digestion) in contrast to good antibody production as a physiologic defense reaction, the former making its appearance only when the latter failed. In other words, it was considered that the reactions indicated damage, optimal antibody production being induced by doses of antigen that were smaller than those which caused these reactions.

Nye and Parker,[14] who injected rabbits intravenously with 1 to 5 cc. of living or 5 to 10 cc. of killed broth culture of nonhemolytic gamma type streptococci, found also first chiefly lymphocytic and later monocytic reactions especially in the lungs. Rabbits killed after twelve to sixteen injections showed definitely less response than did those killed after five or six injections. As the agglutinin titers remained low (1:1,280 and 1:2,560 in the two animals tested), skin tests remained negative and injections of nonantigenic materials such as india ink or "collargol" a preparation of colloidal silver and silver oxide stabilized by derived egg albumin, caused essentially the same though less pronounced lesions, it was concluded that they were not reactions of sensitization or immunization, but that they "represented the nonspecific reaction of the rabbit in the process of disposing of certain foreign materials injected into the blood stream."

While Nye and Parker, like us,[16] found no evidence for an immunizing function of the general vascular reactions, Epstein [18] came to a different conclusion. In studying the livers of rabbits given repeated intravenous injections of 0.5 cc. of pig serum, rabbit heart extract, sheep erythrocytes and so forth he observed the appearance in the sinusoids of "medium sized and large, frequently irregularly shaped cells with abundant very basophilic cytoplasm—showing small sickle-shaped or round droplet-like juxtanuclear vacuoles only in occasional cases." Epstein believed that these were derivates of the histiocytes of the liver; his illustrations, however, leave no doubt that these were the same lymphoid-plasma cellular elements described first by Oeller and Siegmund. As the Wassermann reaction, Meinicke reaction and precipitin and hemolysin determinations indicated good antibody response, Epstein concluded that the appearance of the histiocytes was a morphologic expression of antibody production.

It should be noted (1) that Epstein used much smaller doses than my associates and I or Nye and Parker, (2) that he did not find reactions in the lungs of his animals and (3) that his hepatic reactions were lymphoid-plasma cellular rather than monocytic-histiocytic. If we concluded that our reactions were not a morphologic expression of antibody production, we were speaking of the more severe monocytic-histiocytic reactions. Our conclusions, therefore, do not conflict with those of Epstein.

In subsequent years similar observations were reported, notably by Rich, Lewis and Wintrobe [17] and by Smith, Morgan and Mudd.[18] Rich, Lewis and Wintrobe, who studied the behavior of the spleen during immunization, concluded that the large mononuclear cells which proliferated in this organ and presumably were the sources of antibody were not histiocytes but resembled lymphoblasts in all observed respects. Although these cells were not necessarily lymphoblasts in the sense of being immature lymphoid cells, it was conceivable that they were lymphocytes which were greatly enlarged because they performed some special function. On the other hand Smith, Morgan and Mudd, in their study of the histiopathologic changes produced in rabbits inoculated with whole hemolytic streptococci and with certain of their component fractions, came to the conclusion that the parenchymatous degeneration as well as the endovascular and perivascular infiltrations with lymphocytes, plasma cells and histiocytes which developed in their animals were toxic manifestations characteristic of some streptococcic products.

The investigation of the general mesenchymal reactions took a new turn only in 1941 when Bjørneboe introduced quantitative measures into this study. In a first series of experiments [19] several groups of rabbits were injected intravenously with up to eight different types of pneumococci simultaneously, each rabbit receiving 500 million cocci of each type every other day for six months; one group of rabbits received 2.5 billion cocci of one type. It was found that of the animals that received three types of pneumococci all survived the six months of experimentation; of those that received

15. Selye, H.: The General Adaptation Syndrome and the Diseases of Adaptation, J. Clin. Endocrinol. **6**: 117, 1946.

16. (a) Ehrich, W. E., and Voigt, W.: II. Ueber die Reaktionen des Gefässbindegewebsapparates auf intravenöse Staphylokokkeninjektionen und ihre Bedeutung, Beitr. z. path. Anat. u. z. allg. Path. **93**: 348, 1934. (b) Ehrich and Wohlrab.[15]

17. Rich, A. R.; Lewis, M. R., and Wintrobe, M. M.: The Activity of the Lymphocyte in the Body's Reaction to Foreign Protein, as Established by the Identification of the Acute Splenic Tumor Cells, Bull. Johns Hopkins Hosp. **65**: 311, 1939.

18. Smith, L. W.; Morgan, I. M., and Mudd, S.: Histopathologic Changes Produced in Rabbits by Experimental Inoculation with Hemolytic Streptococci and Certain of their Component Factors, Am. J. Path. **16**: 87, 1940.

19. Bjørneboe, M.: Serumprotein und Antistoffprotein bei Immunisierung mit mehreren Antigenen, Ztschr. f. Immunitätsforsch. u. exper. Therap. **99**: 245, 1941.

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four types the survival rate was 80 per cent, with five types 60 per cent, with six types 40 per cent and with eight types 20 per cent; of the animals that received only one type but five times the individual dose, none survived this period. The antibody response as measured according to Heidelberger and Kabat was enormous. It was observed that with three types of pneumococci antibody production per type occurred with the same rate and in the same quantity as with one antigen; with four or more types, however, there was a decrease in rate and quantity of antibody production per type, though the total volume of antibody was the highest in the animals that received eight types.

In subsequent experiments Bjørneboe [20] injected first 2 cc. and thereafter 4 cc. of a polyvalent pneumococcus vaccine into the auricular veins of 40 rabbits weighing about 2,000 Gm. each. The vaccine contained 1 billion cocci per cubic centimeter of eight different types. The injections were given every other day for ninety-two days. Nine of these rabbits died during the course of immunization. Another group of 7 rabbits received intravenous injections of a polyvalent Salmonella vaccine containing about 1.4 billion bacteria per cubic centimeter. These rabbits were injected every other day for two months, commencing with 0.02 cc. and then doubling the dose at each injection until it amounted to 2 cc.; this dose was then maintained.

There was excellent antibody production in both series of experiments. In the pneumococcus series, for instance, antibody was found first during the second week of immunization, when the rabbits developed an average of 0.5 Gm. per hundred cubic centimeters of agglutinin globulin as measured by Heidelberger and Kabat's method. During the third week the amount rose to 2.0 Gm., and in the fourth week to 3.35 Gm., per hundred cubic centimeters, but thereafter it decreased again in spite of continued administration of the antigen.

In their studies of the morphologic changes in these animals, Bjørneboe and Gormsen [21] found that the weight of the spleen rose to six times normal (in some animals). The lungs were larger and of firmer consistency than those of the controls. Microscopically there was a moderate plasma cell proliferation in liver, spleen and elsewhere three to five days after the first injection. Most of the plasma cells showed a typical picture with eccentric "wheel nuclei" and a light halo in the cytoplasm. Yet many of the plasma cells, especially in the spleen, had a rather scanty cytoplasm and their nuclei were without the characteristic spoke arrangement; in fact, they corresponded to the cells which Rich, Lewis and Wintrobe [17] had designated as "acute splenic tumor cells." The plasma cellular reaction became more intense, particularly in the spleen, until about the thirteenth day; thereafter it was fairly constant until the thirty-first day, but then it became somewhat less massive. In the animals examined two to three and a half months after the last injection the reactions had completely disappeared.

In contrast to the observations of previous students [22] Bjørneboe and Gormsen at no time saw "any pronounced hyperplasia of the follicles or any distinct proliferation of reaction centers." As good correlation was found between the formation of the antibody on the one hand and the proliferation of plasma cells on the other, it was felt that the latter was the source of the former. It was concluded that either the plasma cells alone produced the antibody or the plasma cells represented functional stages of the antibody-producing cells.

It should be noted that Nye and Parker [14] like my associates and I [23] used considerably larger doses than Bjørneboe and Gormsen, whose doses were between those of Epstein [13] and of Nye and Parker,[14] though closer to the latter. Similarly, the cellular reactions observed by Bjørneboe and Gormsen resembled those of Epstein more closely than those of Nye and Parker or of my group, the cellular response being one of lymphoid cells rather than of macrophages. Our conclusions as to the nature of these reactions therefore conflict with those of Bjørneboe and Gormsen as little as they conflict with those of Epstein.

COMMENT

In summary of the various observations recorded in the literature, it may be regarded as established that the intravenous introduction of bacteria and other antigens, if in sufficient dose, produces general vascular reactions particularly in lungs, spleen and liver. Moderate reactions of this type were observed in rabbits which received repeated injections of 0.5 cc. of pig serum or 1.0 cc. of killed broth culture of Staph. aureus. With larger quantities of antigen the reactions became severer; the most massive reactions were observed with the largest doses of antigen injected (the sediment of up to 70 cc. per kilogram of body weight of killed broth culture of Staph. aureus in rabbits). With moderate doses lymphocytes and plasma cells were the predominating cells; with large doses monocytes and histiocytes prevailed. Because moderate doses that produced lymphocytic-plasma cellular reactions caused excellent antibody production, while with large quantities of antigen the antibody response was depressed, and because much evidence has recently been accumulated to show that antibody production is a function of the lymphocytes and plasma cells rather than of the macrophages, it appears that the appearance of lymphocytes and plasma cells in the intima and adventitia of the vessels during exposure to antigen can be regarded as indicating good antibody production. However, if the vascular response is a predominance of monocytes and histiocytes, it may indicate that the stimulus of the injected antigen has exceeded its optimum.

It is difficult to determine where the borderline between benefit and damage may be. From the experiments of Bjørneboe [19] it would appear that with pneumococci in rabbits this borderline was approached in those animals which every other day received three types of pneumococci, about 500 million of each type; with larger doses, there was less antibody production per type of organism and some animals died during the course of administration. However, the location of this borderline is by no means certain, because I observed an initial drop in the weight of the thymus in rabbits receiving 1 to 5 cc. of killed broth culture of Staph. aureus six times a week every other week.[12] This indicated the presence of an alarm reaction.

20. Bjørneboe, M.: Serum Proteins During Immunization, Acta. path. et microbiol. Scandinav. **20**: 221, 1943.
21. Bjørneboe, M., and Gormsen, H.: Experimental Studies on the Role of Plasma Cells as Antibody Producers, Acta path. et microbiol. Scandinav. **20**: 649, 1943.
22. Schilling,[20] Ehrich,[12] Nye and Parker,[14] Ehrich and Voigt,[16a] Rich, Lewis and Wintrobe.[17]
23. Ehrich and Wohlrab,[11] Ehrich,[12] Ehrich and Voigt.[16a]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 13, 1947

A. M. A. MEDAL TO HONOR GENERAL PRACTITIONER

The creation of a midwinter session for the House of Delegates of the American Medical Association and with it a scientific meeting designed particularly for general practitioners was an action of profound significance to physicians and the public. During recent years the need for increased emphasis on the work of the general practitioner has become most apparent. The establishment of the certifying boards in the various specialties has been associated with a tendency to limit the development of general practitioners and also the activities carried on by such physicians in hospitals. To overcome this trend the American Medical Association created a Section on General Practice as a feature of its Annual Session. Now meetings devoted particularly to the needs of the general practitioner at the supplemental session extend still further the interest of the American Medical Association in the education and practice of these physicians.

During the last few years organizations have been established in the field of general practice which have apparently been designed to act as pressure groups to protect the interests of the general practitioner and to forward his work. Since the American Medical Association is the agency which includes the overwhelming majority of physicians in the United States, including a preponderance of general practitioners, the activities of the American Medical Association in this field are likely to have more potency than those of smaller or more localized bodies.

At the meeting of the Board of Trustees in Chicago September 4 and 5 the Board established a special gold medal for a general practitioner who has rendered exceptional service to his community. This award, similar to the American Medical Association's Distinguished Service Medal, which has been given annually since 1938 for scientific advancement in the field of medicine, will be conferred on a general practitioner for the first time at the supplemental session in Cleveland on Jan. 7, 1948. This medal is designed especially to honor a general practitioner who has served as a family physician and who has in that capacity received the recognition of his community. The award will be known as "the medal of the American Medical Association for exceptional service by a general practitioner;" it will include not only the medal but a certificate indicating the reasons for the award. Nominations for this award may be submitted to the headquarters office of the American Medical Association in Chicago by any state medical association or any community service club such as Rotary, Kiwanis or Lions Clubs, by Chambers of Commerce, women's clubs, community councils or similar groups. The nominations should include the name and address of the physician, his scholastic record and a record of his medical service to his community. The nominations may be addressed to the General Practitioner Award, American Medical Association, 535 North Dearborn Street, Chicago 10. When they are received, they will be submitted to the executive committee of the Section on General Practice of Medicine of the American Medical Association, which is composed of Drs. Wingate M. Johnson, Winston-Salem, N. C.; Paul A. Davis, Akron, Ohio, and E. A. Royston, Los Angeles. This committee will select five leading candidates, whose names will be submitted to the Board of Trustees. The Board in turn will nominate three of these to the House of Delegates. On the opening day's meeting at the supplemental session the House of Delegates will receive the nominations together with a record of each of the candidates and will choose by ballot the general practitioner who is to receive the medal.

By this award the American Medical Association will focus the interest of the medical profession and the people of the United States on the tremendous services given to them by general practitioners of medicine. The records of those who are nominated will indicate the range of the activities of such physicians.

THE NITROGEN MUSTARDS (β-CHLORO-ETHYL AMINES)

At the conclusion of World War I the theory was accepted that mustard gas exerts its vesicant action by releasing hydrochloric acid intracellularly. Studies undertaken at the beginning of World War II have revealed [1] a type of action of the sulfur and nitrogen mustards which is unlike that of any other chemical agent and which resembles in many ways that of x-rays. The principal systemic action of the nitrogen and sulfur mustards is that which causes the death of cells. The cellular susceptibility is related to proliferative activity; thus the formed elements of the blood and the mucosa of the gastrointestinal tract first reflect the cytotoxic action of the mustards. The action of the mustards on the blood forming organs as reflected in

1. Gilman, Alfred, and Philips, F. S.: The Biological Actions and Therapeutic Applications of the B-Chloroethyl Amines and Sulfides, Science **103**: 409 (April 5) 1946.

the peripheral blood of both experimental animals and man results in lymphopenia, granulocytopenia, thrombocytopenia and moderate anemia. Although diverse systemic effects can be elicited in the mammalian organism by the administration of toxic amounts of the mustards, threshold doses evoke pathologic changes only in cells and tissues which normally exhibit relatively high rates of proliferation and growth. The mitotic activity of a variety of cells from representative unicellular invertebrate, amphibian, mammalian and higher plant organisms is peculiarly sensitive to inhibition by minimally effective doses. Evidence of a direct toxic action on nuclear mechanisms is the appearance of extensive nuclear fragmentation in cells of the corneal epithelium which have been exposed to doses somewhat higher than those which affect only a mitotic inhibition.

The effects of the mustards on lymphoid tissue, coupled with the finding that actively proliferating cells are selectively vulnerable to the cytotoxic action of the mustards, suggested the therapeutic use of these compounds in the treatment of neoplasms of lymphoid tissue. Of the many substances studied, two variants of special importance have emerged: *tris*(β-chloroethyl) amine hydrochloride and methyl-*bis*(β-chloroethyl) amine hydrochloride. These two nitrogen mustards are water soluble, crystalline compounds which can be readily dissolved in sterile saline solution for intravenous administration. Experiments on transplanted lymphosarcoma in mice revealed that dissolution of such tumors could be rapidly effected, although the dose required bordered on the toxic, and the tumor invariably returned. The first clinical trial of the nitrogen mustards was conducted by Gilman and his associates on a group of 6 patients in the terminal stages of various neoplastic diseases. The results were sufficiently encouraging to warrant further clinical experimentation.

Goodman and his associates [2] described the action of the halogenated alkyl amines (nitrogen mustards) in the treatment of lymphosarcoma, Hodgkin's disease, leukemia and a limited number of allied and miscellaneous disorders. In all, 67 patients have been studied. Encouraging results have been obtained in Hodgkin's disease, lymphosarcoma and chronic leukemia. In the first two disorders dramatic improvement has been observed. Some patients failed to benefit from β-chloroethyl amine therapy. Varied responses have been observed in acute and subacute leukemias. In a considerable portion of terminal and radiation resistant cases, especially of Hodgkin's disease and lymphosarcoma, the β-chloroethyl amines have produced clinical remissions lasting from weeks to months. Responsiveness to radiation therapy may occasionally be restored after a course of nitrogen mustard therapy. These authors maintain that the margin of safety in the use of these chemicals is narrow, necessitating the exercise of caution. The blood picture must be carefully followed as a guide to subsequent dosage. The more serious late toxic effects are those of leukopenia, granulocytopenia, thrombocytopenia and anemia. It is not known whether the β-chloroethyl amines represent the best compounds of their chemical group.

Jacobson and his co-workers [3] report the results of the use of methyl-*bis*(beta-chloroethyl)amine hydrochloride in the treatment of a series of 59 patients with neoplastic and allied diseases of the hemopoietic system.

In their experience acute leukemia and multiple myeloma did not respond to treatment, and the encouraging results have been largely confined to Hodgkin's disease. The common symptoms of fever and malaise were frequently relieved within a short period after the initiation of treatment. Lymphadenopathy, splenomegaly and hepatomegaly usually regressed rapidly. Repeated courses of treatment with the drug have produced further remissions. In certain cases of Hodgkin's disease classified as x-ray resistant, significant clinical remissions have been produced.

ApThomas and Cullumbine [4] treated 21 patients with Hodgkin's disease in the advanced stage and 4 patients with other reticuloses. The most important toxic effect observed was leukopenia, most cases showing this within three to twenty days of treatment. The results when compared with those of radiotherapy showed that the improvement in general condition, the lymph nodes and other signs was produced more quickly with nitrogen mustard than with x-rays but was of shorter duration. Vomiting is more likely and more severe after nitrogen mustard than after radiotherapy. There is no skin or mucosal reaction with intravenous nitrogen mustards, but local thrombosis at the injection site has been noted in a few cases. Leukopenia is certain and sometimes severe after nitrogen mustard, whereas after radiotherapy it occurs only when extensive areas are treated and can be controlled by stopping treatment. They conclude that nitrogen mustards are useful in the palliative treatment of extensive Hodgkin's disease. The symptoms can still be relieved by nitrogen mustards in cases in which radiotherapy has been abandoned.

It appears that so far these newer substances, like irradiation, have failed to cure Hodgkin's disease. However, the beneficial action already noted is of great importance, for hundreds of variants await synthesis and evaluation and it is probable that a substance will be developed which will have a more selective action on the tissues with less toxic effect.

2. Goodman, L. S.; Wintrobe, M. M.; Dameshek, William; Goodman, M. J.; Gilman, Alfred, and McLennan, Margaret T.: Nitrogen Mustard Therapy, J. A. M. A. **132**: 126 (Sept. 21) 1946.

3. Jacobson, L. O.; Spurr, C. L.; Barron, E. S. G.; Smith, Taylor; Lushbaugh, Clarence, and Dick, G. F.: Nitrogen Mustard Therapy, J. A. M. A. **132**: 263 (Oct. 5) 1946.

4. ApThomas, M. I. R., and Cullumbine, Harry: Nitrogen Mustards in Hodgkin's Disease, Lancet **1**: 899 (June 28) 1947.

Current Comment

DR. WINGATE JOHNSON ELECTED TRUSTEE

At its session held in Chicago September 4, the Board of Trustees of the American Medical Association elected Dr. Wingate M. Johnson, professor of clinical medicine at Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., a member of the Board of Trustees to fill the unexpired term of the late Dr. Charles W. Roberts, who died in Atlanta, Ga., July 28. Dr. Wingate M. Johnson is widely known to the medical profession in the United States as one of the leaders in the field of internal medicine. He has practiced in Winston-Salem almost continuously since his graduation from Jefferson Medical College in 1908. Dr. Johnson has been a president of the North Carolina State Medical Association and also of the American Geriatrics Society. He is editor of the North Carolina State Medical Journal and author of many monographs and articles. Of late he has devoted himself increasingly to raising the status of the general practitioner, and he has served as chairman of the Section on General Practice of the American Medical Association.

REACTIONS TO BACTERIAL ANTIGENS

Elsewhere in this issue (page 94) is a report of the Council on Pharmacy and Chemistry entitled "An Inquiry into the Significance of the Tissue Reactions Caused by Antigens," by Dr. William E. Ehrich. This interesting report describes reactions in the regional lymph nodes, the general vascular system and the vital organs which may follow injection of bacterial antigens. The beneficial physiologic responses of active immunization are shown to merge, with dosages above optimal, into reactions indicating toxicity. Currently recommended dosages of bacterial vaccines (typhoid-paratyphoid 3.75 billion bacilli per course, pertussis 70-100 billion bacteria per course) may be close to the borderline between optimal immunizing and toxic quantities as estimated from the experimental results presented by Ehrich and from clinical observations. The efficacy and desirability of proper immunization procedures are unquestionable and are borne out by extensive experiences within the armed services during the war. Optimal quantities can readily be exceeded, and the systemic response in vascular system and organs weigh against indiscriminate use of immunization procedures. Moreover, there are grounds for believing that even currently approved vaccines may be susceptible of improvement in terms of reduced toxicity with undiminished efficacy by more intelligent separation and use of the specific immunizing antigens required. This is a goal for joint laboratory and clinical research. Active immunization is desirable in instances in which there is a real risk of exposure to infection, in which there is proved efficacy of the specific agent used as immunizing antigen, and when dosage is adequately known. The notion that a vaccine of unknown efficacy "can't hurt the patient even if it doesn't help him" is hardly tenable. The use of shotgun "catarrhal vaccines" [1] may involve harm as well as needless expense. Still other consequences of vaccination with bacteria or their products deserve consideration; these are the manifestations of allergy elicited when the patient is hypersensitive to the specific bacterial or other antigens in question. The systemic inflammatory responses of allergy closely resemble those due to primary toxicity. The many complex aspects of bacterial hypersensitivity have been ably discussed by Rich,[2] but their discussion would be beyond the scope of Dr. Ehrich's report. However, allergic reactions to bacterial vaccines as well as reactions of primary toxicity are complications that demand the use of vaccines only with specific and rational indications and in optimal dosage.

COMMERCIALISM IN MEDICINE IN MEXICO

Among the situations which strike the North American visitor peculiarly in some Latin American countries is the exploitation of the medical profession by unprincipled commercial agencies with ideals incompatible with the ethical standards of medicine as practiced in the United States. For instance, in Mexico there is an agency called "Productos Omega" which sends to every physician in Mexico a pack of forms on the cover of which there appears an illustration of a marble deskstand with two fountain pens. The printing indicates that the value of this little adornment is $40. The doctor is told that he is going to get this outfit absolutely free. All he has to do is to write twenty prescriptions for the products manufactured by "Omega" and then return to the firm the stubs of the prescriptions which indicate the name of the product prescribed, the name of the pharmacist, the name of the disease and the number of the prescription. A reference to the products of this company reveals that they are the manufacturers of some of the most extraordinary shotgun prescriptions ever introduced in medical practice. One includes tuberculin mixed with "thiocol" (potassium guiacolsulfonate) and two other ingredients. Another, a mercury preparation, is offered for all gastrointestinal complaints, including typhoid, paratyphoid, colon infections, gastroenteritis and fevers. For the ladies there is a preparation called "contraseptol," said to be useful in irrigating all the cavities, which includes seven different ingredients; a uterine sedative contains hydrastis, viburnum, sarsaparilla and what not. Several unscientific preparations against malaria are included. North American medicine has fought a continuously gaining battle against this type of deterioration of medical science ever since the creation of the Council on Pharmacy and Chemistry of the American Medical Association in 1905. In the advancement of medicine in Latin American countries one of the first steps must be the elimination of the commercialism that saps the very vitals of medical science in those countries.

1. The Use of Vaccines for the Common Cold, J. A. M. A. **126**: 895 (Dec. 2) 1944.
2. Rich, A. R.: The Significance of Hypersensitivity in Infections, Phys. Rev. **21**: 70 (Jan.) 1941.

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ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 13, 1947.

Offer Use of Radioactive Isotopes to All Nations

Limited amounts of twenty radioactive tracer elements, out of the 90 odd isotopes produced in American atomic plants, have been offered by the United States to all nations to assist in the war on disease, President Truman announced in a telegram to the Fourth International Cancer Research Congress at St. Louis. Mr. Truman explained that the tracer elements had been made available for limited distribution to research workers in other countries. He termed the project an expression of "greater international cooperation in the field of medical and biologic research." The Atomic Energy Commission simultaneously announced that no atom bomb secrets would be endangered, stating that none of the tracers offered for sale are applicable to the development of atomic energy for industrial or military purposes. A condition of the offer is that all discoveries of foreign research workers through use of the isotopes would have to be reported freely to all nations.

Study of Effect of Atom Bombing on Human Beings

The Atomic Energy Commission and the National Research Council will jointly continue long-range studies of the effect of atomic bombings on human survivors of the Nagasaki and Hiroshima attacks. A group has been assigned to this work as a result of a directive by President Truman, who authorized the council "to undertake a continuing study of the medical and biologic effects of the atomic bomb on man." Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research is chairman; the members are: Drs. George Beadle, California Institute of Technology; Detlev W. Bronk, National Research Council; Austin M. Brues, Argonne National Laboratory; George M. Lyon, chief, Radioisotope Research Section, Veterans Administration; Shields Warren, Harvard Medical School; Stafford L. Warren, University of California; George H. Whipple, University of Rochester, and Raymond E. Zirkle, University of Chicago. Dr. Lewis H. Weed, chairman of the National Research Council's division of medical sciences, said that major studies will be undertaken in genetics and heredity. Those taking part will be: Drs. H. J. Muller, Nobel prize winner, University of Indiana; L. H. Snyder, Ohio State University; James V. Neel, University of Michigan; C. H. Danforth, Stanford University, and D. R. Charles, University of Rochester.

MacArthur Reports Socialized Medicine Is Not Planned by U. S. for Japan

The War Department disclosed that General MacArthur had denied allegations by Representative Harness of Indiana, chairman of a House Expenditures subcommittee studying propaganda, that a government mission was going to Tokyo "committed in advance to a national program for socialized medicine in Japan." The general stated that "no socialization of medicine is at issue and nothing of propaganda is involved." He said that the Japanese government had asked for American advice on social security measures and the purpose of the United States was to give it.

Navy Launches Program to Reduce Venereal Disease

Coincident with reports from Italy that the U. S. Army is endeavoring to reduce its high venereal disease rate there, the U. S. Navy Potomac River Command announced a program to continue cutting down the disease rate here. The monthly rate per thousand in the District of Columbia is reported as being 34 in April, 34.67 in May, 38.28 in June and 34.93 in July. Reports from Leghorn, Italy, state that the July rate there was 240 cases per thousand men as compared with 350 per thousand in January.

Cancer Institute Announces Educational Drive

The National Cancer Institute has announced that it is about to launch a $1,250,000 program of cancer education in medical schools and other institutions. Grants will be made to institutions having cancer educational programs approved by the National Advisory Cancer Council. The purpose is to improve and integrate cancer instruction in medical schools. Grants will range from $10,000 to $25,000 and later will be made to dental schools on a lesser scale. Surgeon General Thomas Parran claims that medical students have received too little instruction in the field of cancer.

Coming Medical Meetings

Conference of State Medical Society Secretaries and Editors, Chicago, A.M.A. Headquarters, Nov. 7-8. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Neurological Surgery, Colorado Springs, Broadmoor Hotel, Oct. 9-11. Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Palmer House, Oct. 12-17. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Anti-Arthritis Association, Del Mar, Calif., Oct. 4-5. Dr. Robert T. Pottenger, 65 N. Madison Ave., Pasadena, Calif., Secretary.

American Clinical and Climatological Association, Colorado Springs, Oct. 13-15. Dr. James Bordley III, Johns Hopkins Hospital, Baltimore 5, Secretary.

American Hospital Association, St. Louis, Sept. 22-25. Mr. George P. Bughee, 18 E. Division St., Chicago, Exec. Secretary.

American Public Health Association, Atlantic City, Oct. 6-10. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 2-3. Dr. O. J. Pollak, Wilmington General Hospital, Wilmington 14, Delaware, Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 28-30. Dr. A. S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

Association of American Medical Colleges, Sun Valley, Idaho, Oct. 27-29. Dr. Fred C. Zapffe, 3 S. Wabash Ave., Chicago, Secretary.

Central Neuropsychiatric Association, Galveston, Texas, Oct. 17-18. Dr. William C. Menninger, 3617 W. Sixth Ave., Topeka, Kans., Secretary.

Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.

Connecticut Clinical Congress, New Haven, Sept. 16-18. Dr. Francis G. Blake, 258 Church St., New Haven, Chairman.

Delaware, Medical Society of, Wilmington, Oct. 13-15. Dr. John F. Hynes, Memorial Hospital, Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 6-8. Mr. Theodore Wiprud, 1718 M Street N.W., Washington 6, Secretary.

Indiana State Medical Association, French Lick, Oct. 28-30. Mr. Ray E. Smith, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

International College of Surgeons, U. S. Chapter, Chicago, Palmer House, Sept. 29-Oct. 2. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

Inter-State Postgraduate Medical Association of North America, St. Louis, Public Auditorium, Oct. 14-17. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 6-9. Mr. E. Leas Clower, 630 Shukert Bldg., Kansas City 6, Executive Secretary.

Kentucky State Medical Association, Louisville, Sept. 29-Oct. 2. Dr. P. E. Blackerby, 620 S. Third St., Louisville 2, Secretary.

Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 23-26. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

New England Postgraduate Assembly, Boston, Copley-Plaza Hotel, Oct. 29-31. Dr. Leroy E. Parkins, 8 Fenway, Boston 15, Chairman.

New York State Association of Public Health Laboratories, Albany, Nov. 7. Miss M. B. Kirkbride, New Scotland Ave., Albany 1, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.

Southern Psychiatric Association, Birmingham, Ala., Oct. 13-14. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.

Southwestern Medical Association, Phoenix, Ariz., Hotel Westward Ho, Nov. 6-8. Dr. Louis W. Breck, 116 Mills St., El Paso, Texas, Secretary.

Vermont State Medical Society, Burlington, Hotel Vermont, Oct. 1-3. Dr. Theodore H. Harwood, 128 Merchants Row, Rutland, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 13-15. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.

Washington State Medical Association, Seattle, Olympic Hotel, Sept. 28-Oct. 1. Dr. Harold E. Nichols, 327 Cobb Building, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder, Oct. 6-8. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

World Medical Association, Paris, France, Sept. 17-20. Dr. Charles Hill, B. M. A. House, Tavistock Sq., London, W. C. 1, England, and Dr. P. Cibrie, 60 boulevard de Latour-Maubourg, Paris 7e, France, Joint Secretaries.

GOVERNMENT SERVICES

ARMY

MEDICAL CORPS RESERVE OFFICERS' TRAINING CORPS (ROTC)

The Surgeon General has announced that Medical Corps ROTC units will be in operation at forty-three approved medical schools during the 1947-1948 academic year. This is more than double the number that were in operation during the 1946-1947 academic year. The Surgeon General plans to arrange with the remaining approved medical schools during the next year for the establishment of units in the fall of 1948. It is hoped that the goal of a unit in every approved medical school will be realized by the beginning of the 1948-1949 academic year.

The program is a procurement objective for the Reserve and Regular Army components of the Medical Department. Several hundred graduates are required on a yearly basis to build up an effective organized reserve corps in the interest of the national security program.

The program of instruction consists of two courses: an elementary course given during the freshman and sophomore academic years and an advanced course given during the junior and senior years at a rate of one hour of instruction per week throughout the four academic years. In addition, the student must agree to complete a six week summer training period in any summer following the sophomore academic year.

The instruction is designed to give the student progressive knowledge of the Army in general and the Medical Department in detail, together with the essentials of the complex problems of military preventive medicine. On satisfactory completion of the program, the young Reserve first lieutenant should, on mobilization day, be capable of taking care of himself in the Army and performing the functions of a general duty medical officer. Should he if on active duty be assigned to a troop unit, he must be given further training.

Medical Corps officers of the Regular Army are detailed to the schools as professors of military science and tactics of the ROTC units. The War Department General Staff has approved a policy of the Surgeon General to allow these PMS&Ts to participate in the graduate professional specialty training at the schools concerned.

The postwar Regular Army requires several hundred specialists certified by the various American specialty boards. Of this number, the Army graduate professional program of the Medical Department will produce about 50 per cent during the next few years. Therefore the Medical Department must take advantage of approved civilian facilities to augment requirements. Accordingly, the forty-three schools have made training available in a residency, a fellowship or on a postgraduate course basis. It is hoped to place this arrangement on a permanent basis.

The forty-three schools with the specialties indicated are as follows:

University of Arkansas School of Medicine	Obstetrics & gynecology
Baylor University College of Medicine	Internal medicine
University of Buffalo School of Medicine	Internal medicine
University of California Medical School	Psychiatry
University of Chicago School of Medicine	Psychiatry
University of Cincinnati College of Medicine	Psychiatry
University of Colorado School of Medicine	Psychiatry
Cornell University Medical College	Internal medicine
Duke University School of Medicine	Dermatology
Georgetown University School of Medicine	Internal medicine
University of Georgia School of Medicine	Radiology
George Washington University School of Medicine	Pathology
University of Illinois College of Medicine	Allergy
Indiana University School of Medicine	Cardiology
State University of Iowa College of Medicine	Thoracic surgery
Jefferson Medical College of Philadelphia	Internal medicine
Johns Hopkins University School of Medicine	Public health
University of Louisville School of Medicine	General surgery
Loyola University School of Medicine	Internal medicine
Medical College of Virginia	Internal medicine
University of Michigan Medical School	Obstetrics & gynecology
University of Minnesota Medical School	Anesthesiology
University of Nebraska College of Medicine	Orthopedic surgery
New York Medical College	Internal medicine
Ohio State University College of Medicine	General surgery
University of Oklahoma School of Medicine	Orthopedic surgery
University of Oregon Medical School	Internal medicine
University of Pennsylvania School of Medicine	Dermatology
University of Pittsburgh School of Medicine	Ophthalmology
St. Louis University School of Medicine	Orthopedic surgery
Syracuse University College of Medicine	Internal medicine
Temple University School of Medicine	Ophthalmology
University of Texas School of Medicine	Anesthesiology
Tufts College Medical School	Pathology
Vanderbilt University School of Medicine	Internal medicine
University of Vermont College of Medicine	Pathology
University of Virginia Department of Medicine	Otolaryngology
Washington University School of Medicine	Otolaryngology
Wayne University College of Medicine	Basic sciences
Western Reserve University School of Medicine	Pediatrics
University of Wisconsin Medical School	Internal medicine
Yale University School of Medicine	General surgery
New York University College of Medicine	Basic sciences

THREE DAY MEDICAL ROTC CONFERENCE

Medical Corps officers who will serve as professors of military science and tactics in the Reserve Officers' Training Corps program in forty-three approved medical colleges during the coming school year attended a three day orientation conference August 27-29 in the Office of the Surgeon General. Medical students in leading educational institutions of the country will receive intensive training in military medicine through the tutelage of these Medical Corps officers, who will hold the rank of either major, lieutenant colonel or colonel.

Participating in the three day orientation conferences were representatives of the Surgeon General's Office, Army Ground Forces, G-3 or Organization and Training Division of the General Staff and the surgeons of the six Army areas.

ROTC training will be compulsory for freshmen and sophomore students in about one third of the forty-three medical colleges, mainly land grant institutions. In the others it will be voluntary. The medical officers who give the instruction to the medical students will also receive training themselves through residencies, fellowships and postgraduate work in the special fields of medicine and surgery at the respective institutions to which they are assigned.

VENEREAL DISEASE RATE LOWEST SINCE VJ DAY

The War Department has announced that the Army's venereal disease rate both at home and abroad has reached a postwar low. The venereal disease incidence rate in Europe is 23 per cent below the July 1946 high, is 50 per cent below the high rate in the Pacific in October 1946 and is 47 per cent below the April 1946 peak in the United States. Since the stringent regulations outlined by the Secretary of War last January, a sharp drop has occurred in venereal disease, and the War Department Venereal Disease Control Council, comprised of ranking members of the general and special staffs, has met periodically to survey the situation and to develop further measures for venereal disease control.

MEDICAL DEPARTMENT PERSONNEL TO SHARE IN WALTER REED MEMORIAL

Members of the Medical Department of the Army will have the opportunity to share in the honor of placing a bust of the late Major Walter Reed in the New York University Hall of Fame, the Surgeon General has announced. Although a few individual doctors requested the privilege of contributing the funds for this purpose, estimated at about $6,000, all members of the Medical Department will be given an opportunity to contribute to this fund if they desire.

Ceremonies observing the occasion will be held during the fourth International Congresses of Tropical Medicine and Malaria in Washington, D. C., May 10-18, 1948, at which time the British also will pay honor to their great malariologist Sir Ronald Ross.

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NAVY

NAVAL MEDICAL RESEARCH INSTITUTE IN CAIRO

Commander Robert A. Phillips (MC), U.S.N., has been assigned to command the U. S. Naval Medical Research Unit in Cairo, Egypt. Commander Phillips went to Cairo in 1945 with the United States Typhus Commission and later to Dachau, Germany. He formerly did "faculty service" at Yale, Stanford, Harvard and Cornell universities. His first naval assignment was in 1940 at Pensacola, Fla.; later he served with the naval medical unit at Rockefeller Institute, New York.

Three American authorities on mosquito eradication left Cairo recently for the Kharga and Dekhla oases to study technical problems of malarial control in those areas. They are Dr. John M. Weir of the Rockefeller Foundation, D. C. C. Deonier of the U. S. Department of Agriculture, now on loan to the Naval Research Unit in Egypt, and Ensign C. E. Connell, who is attached to the Naval Research Unit. Egyptian health officials accompanied this group to the oases.

ANNAPOLIS HOSPITAL RECEIVES AWARD FOR SAFETY

The U. S. Naval Hospital at Annapolis, Md., on August 27 was given the Secretary of the Navy's Award for Achievement in Safety for the years 1945-1946. The award read as follows: The Secretary of the Navy's Award for Achievement in Safety is given to the Naval Hospital, Annapolis, Md., for a frequency rate of 0.00 for the years 1945 and 1946. This perfect record for two consecutive years indicates constant vigilance, enthusiastic and wholehearted cooperation, and untiring effort among all personnel. The Naval Hospital is highly commended for the establishment and maintenance of an adequate and workable safety program, which is necessary in order to maintain this low frequency rate. The Secretary's Award for Achievement in Safety is presented in grateful acknowledgment for the saving of human life, the reduction in government expenditures and the increased production which this low frequency rate signifies.

PHYSICIANS PILOT SURGEON GENERAL ON INSPECTION TRIP

Rear Admiral Clifford A. Swanson, Surgeon General of the Navy, on August 20 flew to Norfolk, Va., to inspect the Hospital Corps School at Portsmouth. The pilot and the copilot Commander N. L. Barr (MC) and Capt. B. Groesbeck Jr. are both navy doctors. Others in the plane were Rear Admiral A. W. Chandler (DC), assistant chief, Bureau of Medicine and Surgery for Dentistry; Capt. B. W. Hogan (MC), executive officer, U. S. Naval Hospital, Bethesda, Md., and Lieut. Commander A. H. Nelson (HC), administrative assistant to the Surgeon General. Following inspection of the school the Surgeon General addressed all the medical personnel at the Portsmouth Naval Hospital.

PERSONAL

Captain Harold J. Bowen (MC), U.S.N., has been assigned as chief of surgery at the Charleston naval hospital, Charleston, S. C. Following his recent war service in the Pacific area Captain Bowen did postgraduate work at Mayo Clinic, Rochester, Minn.

PUBLIC HEALTH SERVICE

PHARMACY SECTION ESTABLISHED

A new pharmacy section has been established in the Hospital Division of the U. S. Public Health Service for the further development of pharmaceutical activities in the Marine Hospitals and their adjunct medical relief stations. The new pharmacy service will be under the direction of George F. Archambault, graduate and former faculty member of the Massachusetts College of Pharmacy, who for a year was director of professional relations in the New England states for the Liggett Drug Company and during the war was chief pharmacist at the Boston Marine Hospital.

The Hospital Division of the Public Health Service has the responsibility of providing medical, dental and hospital services for American merchant seamen, members of the Coast Guard and their dependents, the Coast and Geodetic Survey, foreign merchant seamen and others designated by law. It provides this service primarily through its system of twenty-four Marine Hospitals and 115 medical relief stations located throughout the United States and its possessions.

A further important development in connection with this program is a plan for commissioning a limited number of pharmacy-college graduates every year in the Public Health Service Commissioned Reserve Corps, selecting such men as have demonstrated special interests and abilities for careers in the public health field. Already an active recruiting campaign for pharmacists to be placed on commissioned status has been conducted by the Public Health Service, the first such recruitment for pharmacists since 1930. From the resulting list the first appointments are to be made of pharmacists to serve as commissioned officers in the regular corps of the Public Health Service.

FIRST FEDERAL GRANTS FOR RESEARCH IN MENTAL HEALTH

The Surgeon General of the U. S. Public Health Service has announced the award of the first federal grants for research in mental health under the new National Mental Health Act. Under this authorization the mental health program received its first appropriation totaling $7,500,000 on July 8, which will be used to finance, in addition to paying the cost of mental health activities within the Public Health Service, a threefold program of research and development of local mental health facilities and the training of mental health personnel. The award of the first federal grants announced for this purpose will go to institutions and individuals. The grants awarded were recommended by the National Mental Health Advisory Council, which is composed of experts in the field of mental health.

MISCELLANEOUS

SALE OF SURPLUS GOVERNMENT PROPERTY

The War Assets Administration has announced the following sales of surplus government property:

The Regional Office, 30 Van Ness Avenue, San Francisco 2, is having a sale of drugs and of hospital and laboratory supplies. The closing date for bids is September 19. Awards in this sale will be made to the highest bidder without regard to the priority status. Among the items for sale are hospital beds, bedside tables, sterilizers, medicine cabinets, splints and rubber gloves.

A fixed price sale of medical, dental and x-ray equipment is being conducted. Orders must be received at the W. A. A. Customer Service Center, Bldg. T-2, ORD, East Bessemer Avenue and South 9th Street, Greensboro, N. C., before 5 p. m., September 16. This sale is for World War II veterans only and includes such items as x-ray field equipment, cassettes, film holders, dental chairs, lathes and engines, cystoscopes and dental aspirating units.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest; such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Refresher Courses for Physicians.—The University of California School of Medicine will present medical refresher courses for graduates of approved medical schools on the Los Angeles campus during the fall and winter months. Courses will be available in mid-September in dermatology, gynecology, medicine, general surgery, cardiology and pediatrics. Visiting lecturers scheduled to come to the Los Angeles campus include Drs. S. Charles J. Imperatori, New York; Erik Ask-Upmark, University of Upsala, Sweden; Ignacio Chavez of Mexico, D. F.; Tinsley R. Harrison, Dallas, Texas; Isadore Snapper, New York; Paul White, Boston; Frank E. Adair, New York; J. Dewey Bisgard, Omaha; Frederick A. Coller, Ann Arbor, Mich., and Ferdinand R. Schemm, Great Falls, Mont.

Dr. Stafford Warren to Head Radiation Laboratory.—The Medical School on the Los Angeles campus of the University of California will begin operating an atomic radiation medical laboratory about October 15. Research to discover means of treating radiologic injury to human beings will be the fundamental function of the new laboratory, which the university will maintain and staff under contract with the U. S. Atomic Energy Commission. The starting point for laboratory studies will be medical data collected after the bombing of Hiroshima and Nagasaki and the Bikini A-bomb tests. The laboratory will be under the direction of Dr. Stafford L. Warren, whose close connection with the A-bomb development began with his appointment as medical director of the Manhattan project in 1943. He was in charge of the first radiologic survey parties that entered the devastated Japanese cities. Between 30 and 40 persons will be involved in the laboratory project in its initial stages. Dr. Warren was appointed dean and professor of biophysics at the Los Angeles campus of the University of California early this year (THE JOURNAL, Feb. 8, p. 412). He was formerly on the faculty of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., as an associate professor of medicine in charge of radiology from 1925-1940, when he was made professor of radiology.

DISTRICT OF COLUMBIA

Impostor Repeats.—A promise to cure cancer of the breast for $1,200 is reported to have brought "Prof." Bernard Rubin, 68, of the 1600 block, Columbia Road N.W., a $100 fine and ninety days in jail when he was found guilty of practicing medicine without a license July 30 in Municipal Court in Washington, according to the Washington *Times-Herald*. Last March Rubin was fined $75 and sent to jail for sixty days for illegally practicing medicine, and in 1931 he was put on probation for petty larceny.

Georgetown University Hospital Opens.—Georgetown University's new $3,600,000 hospital opened early last month. Present at the ceremonies were the Very Rev. Lawrence C. Gorman, S. J., president of Georgetown University; the Rev. Paul A. McNally, S. J., dean of the university's medical school, and Sister Mary Antonella of the Sisters of Charity of Nazareth, superior and administrator of the new hospital. Formal dedication will not take place until this fall. The new hospital contains 407 beds and 123 bassinets, thirteen operating rooms, six delivery and labor rooms and a nursery. Its construction took thirty-one months. The hospital has been placed under the direction of the Sisters of Charity of Nazareth. The old Georgetown hospital will be used as a dormitory for Georgetown University.

ILLINOIS

State Toxicologic Analytic Service.—Establishment of a toxicologic analytic service at the University of Illinois College of Medicine, Chicago, for law enforcing agencies of the state has been announced by Dr. Carl C. Pfeiffer, head of the department of pharmacology and toxicology (THE JOURNAL, August 9, p. 1251). Dr. Pfeiffer said that the university laboratory would perform toxicologic analyses of the organs of any person whose death was unexpected. The service will be extended to all state's attorneys and coroners in the fifty-two counties of Illinois. The service has been developed as a result of numerous requests received by the University of Illinois from law enforcing agencies. State's attorneys and coroners have pointed out that facilities for accurate diagnosis of death due to poisoning are inadequate at present. Services to be performed by the university include the determination of blood alcohol, barbiturates, heavy metals, blood carbon monoxide and alkaloid tests and a complete analysis in the event that the cause of death is unknown. A nominal fee will be charged. A member of the professional staff of the department of pharmacology and toxicology will appear as an expert witness when needed. The service will be similar to a state plan already used in Michigan, Indiana and Wisconsin.

Chicago

First Cancer Research Fellowship.—Through the University of Chicago Cancer Research Foundation the university has established its first cancer research fellowship. Walter Schwimmer, Chicago advertising executive, has given the foundation $2,500 for the Daisy Schwimmer Fellowship in honor of his late wife. The research fund will be renewed for five years at $2,500 annually.

Improve Sanitation in Eating Places.—Since the city council in January authorized the board of health to hire three additional supervisors and twenty-eight additional inspectors, eighty-seven Chicago restaurants closed voluntarily while needed sanitary corrections were made. Over 6,000 food handlers have taken the four hour course in food handling and hygiene offered by the board of health. A new city ordinance, which became effective August 1, lays down more stringent rules for food dispensing establishments than were provided previously.

LOUISIANA

Narcotic Violation.—The Bureau of Narcotics, Washington, D. C., advises that Dr. Henry R. Officer, Sugartown, pleaded guilty in the U. S. District Court at Alexandria, July 24, to violation of the internal revenue code and was fined $5,000. Dr. Otto L. Freeman, Basile, who pleaded guilty in the same court July 21 to violation of the internal revenue code, was placed on probation for a period of five years. The court also fined him $2,500.

American Academy of General Practice.—A branch of the American Academy of General Practice was organized in Alexandria July 13. The aims and objective of the academy are to fulfil among general practitioners the same functions as are performed for physicians and surgeons by the American Academy of Physicians and Surgeons, to revise the standards of general practice and to bring greater recognition of the general practitioner. The following officers were elected: Drs. Jason P. Sanders, Shreveport, president; Guy R. Jones, Lockport, president-elect; Dorman B. Barber, Alexandria, vice president; Harry P. Forsyth, Alexandria, secretary, and Johnnie W. Atkinson, Gretna, treasurer.

MASSACHUSETTS

Graduate Course in Pediatrics.—Harvard Medical School, Boston, will hold a two week course, six hours daily, in diagnosis, therapy and prevention of diseases of infants, children and adolescents at the Massachusetts General Hospital, Boston, October 13-24. The course will cover growth and development, nutrition, endocrinology, metabolic and infectious diseases, allergy, cardiology, surgery, neurology and psychiatry. For information, address Course for Graduates, Harvard Medical School, Boston.

Medicolegal Conference.—The departments of legal medicine of the medical schools of Harvard, Tufts and Boston University and the Massachusetts Medico-Legal Society will present a six day program of lectures, conferences and demonstrations concerning the investigation of deaths in the interest of public safety October 13-18, at Harvard. Attendance will be limited to 25 persons who have registered in advance. Information may be obtained from the Department of Legal Medicine, 25 Shattuck Street, Boston.

MISSOURI

Dr. Post Awarded Howe Medal.—Dr. Lawrence T. Post, head of the ophthalmology department, Washington University School of Medicine, St. Louis, was recently awarded the Lucien Howe medal of the American Ophthalmological Society at its annual meeting at Hot Springs, Va. The award was in recognition of Dr. Post's work in teaching and for leadership in the study of eye diseases. Dr. Post, a graduate of Johns Hopkins University, 1913, is a member of the National Research Council's Subcommittee on Ophthalmology and serves on the staffs of a number of St. Louis hospitals.

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NEW YORK

Dr. Roberts Retires.—Dr. Bertrand E. Roberts, Poughkeepsie, after twenty-five years' service in the New York State Department of Health, retired July 23. He has been associated with the department since 1922, first as epidemiologist and for the past seventeen years as district state health officer in charge of the Poughkeepsie area. He was health officer and city bacteriologist of Oskaloosa, Iowa, in 1916.

Four Hundred Fifty Year Practitioners.—Over 400 New York physicians who have practiced medicine for fifty years or more have been given commemorative certificates by the Medical Society of the State of New York. Dr. Nathan B. Van Etten, 300 East Tremont Avenue, Bronx 57, New York, has been named chairman of the organization committee for the suggested Fifty Year Club of New York State.

New York City

Dr. Friedman Retires.—Dr. Emanuel D. Friedman, chairman of the department of neurology, New York University College of Medicine, retired September 1 after thirty-seven years' service at the college and will become professor emeritus. A graduate of New York University College of Medicine, 1907, he has taught continuously since 1913. He became successively instructor in neuropathology in 1919, lecturer in neuropathology in 1922, clinical professor of neurology in 1924 and professor of neurology and head of the department in 1927. Of his various hospital staff appointments in New York and New Jersey, he will retain that of neuropsychiatrist to the psychiatric division at Bellevue Hospital.

Dr. Peterson to Go to China for WHO.—Dr. Jerome S. Peterson, district health officer of the New York City Department of Health, returned to China September 1 to serve a year as epidemiologist for the World Health Organization. He has been granted leave of absence. His work will be mainly concerned with the study and control of cholera, bubonic and pneumonic plague and kala-azar. A graduate of Columbia University College of Physicians and Surgeons, New York, 1931, Dr. Peterson joined the New York Health Department in 1937 and has been a health officer since 1942. For ten months last year he served with the United Nations Relief and Rehabilitation Administration as chief medical officer in China, where he had previously studied cholera.

OHIO

Society News.—The new officers for the Ohio State Radiological Society for 1948 are Dr. Ralph W. Holmes, Chillicothe, president; Henry Snow, Dayton, vice president, and Carroll C. Dundon, Cleveland, secretary-treasurer. The society will meet in conjunction with the Ohio State Medical Association in Cincinnati in May 1948.

Dr. Jordan Joins Cleveland Clinic Staff.—The Cleveland Clinic is expanding its educational activities, with particular emphasis on postgraduate medical training. The increased number of graduate fellowships offered by the clinic since the end of the war in connection with the G. I. Bill requires an augmented educational program of fellowship training. Also the Bunts lecture courses for practicing physicians will be given added importance. In connection with this program the Cleveland Clinic Foundation has added Dr. Edwin P. Jordan, Chicago, to its staff. Dr. Jordan will be director of medical education and the Bunts Educational Institute—the latter a newly created position which will correlate all of the educational activities of the Cleveland Clinic. This will include also the editorial, library, photographic and art departments of the clinic.

OKLAHOMA

Postgraduate Circuit Begins September 22.—The Postgraduate Committee of the Oklahoma State Medical Association has announced that teaching circuit number four, covering Kay, Noble, Pawnee, Osage, Payne, Lincoln, Creek and Tulsa counties, will open September 22. The committee has reported that the incidence of attendance at meetings in the first three circuits has averaged 87 per cent of those enrolled. Teaching centers in the fourth circuit will be Ponca City, Pawhuska, Stillwater-Cushing, Bristow-Sapulpa and Tulsa. The course of instruction will be in gynecology and will extend over a period of ten weeks.

Personals.—Dr. McLain Rogers, Clinton, was appointed acting superintendent of the Western Oklahoma Tuberculosis Sanatorium at Clinton, effective June 23. Dr. Rogers is a graduate of Atlanta (Ga.) College of Physicians and Surgeons, 1902, and is a member of the American College of Surgeons.——At the recent Rotary Convention in San Francisco Dr. Ralph C. Meloy, Claremore, was elected governor of the 136th District of Rotary International and as such will visit the fifty-nine Rotary clubs of Arkansas, Kansas, Missouri and Oklahoma during the next twelve months. Dr. Meloy is a past president of the Rogers County Medical Society.

TEXAS

Convalescent Home for Cancer Patients.—The M. D. Anderson Hospital for Cancer Research, Houston, September 1 opened a new annex, which will house 30 ambulatory cancer patients. The two story brick building was purchased and remodeled as a gift to the Texas Medical Center, Inc., by Mr. and Mrs. Lamar Fleming Jr., Houston, at a cost of about $45,000. Other gifts from individuals and clubs total $5,000. Two types of ambulatory patients will be housed in the annex: out of town cancer sufferers during periods of examination and diagnosis and patients released from the hospital but needing postoperative care or treatment. Free patients and part pay patients will be accepted. The hospital is operated by the University of Texas.

Dallas Cerebral Palsy Center.—A Dallas treatment center for cerebral palsied children established recently by the Dallas Society for Crippled Children, and approved by the Dallas County Medical Society, is in operation to treat cerebral palsied children, educate the public, demonstrate to the medical profession the benefit of early diagnosis and treatment and carry on research. An advisory board from the medical society helped to set up standards of treatment on an outpatient basis, and the Dallas Junior League supplies financial aid and volunteer workers to assist with clerical details and the care of the children. Similar projects throughout the state with the cooperation of the medical profession will be sponsored by the Texas Society for Crippled Children.

UTAH

State Medical Meeting September 11-13.—The fifty-second meeting of the Utah State Medical Association is being held at the Union Building, University of Utah, Salt Lake City, September 11-13, under the presidency of Dr. Lester A. Stevenson, Salt Lake City. On this centennial year of the settlement of the Salt Lake Valley the program committee has invited a number of natives of Utah in prominent places in the medical world to take part in the annual meeting. They include John L. Emmett, urologist, Rochester, Minn.; A. Ray Irvine, ophthalmologist, Los Angeles; Lawrence W. Sloan, surgeon, and Thomas W. Stevenson, surgeon, both of New York. Other speakers are O. Spurgeon English, psychiatrist, Philadelphia; Louis S. Goodman, pharmacologist, Salt Lake City; C. Gordon Heyd, surgeon, New York; Albert W. Holman, obstetrician and gynecologist, Portland, Ore.; William S. Middleton, internal medicine, Madison, Wis., and Richard H. Young, Salt Lake City. Among the subjects to be discussed are recent advances in drug therapy, infection of the genitourinary tract, present status of plastic surgery, current therapeutic procedures in coronary disease and eye changes associated with thyroid disease, and hydatid mole and chorionepithelioma. There will be seminars in obstetrics, gynecology and surgery Thursday afternoon, one in phychiatry and internal medicine and another in eye, ear, nose and throat on Friday afternoon. The Woman's Auxiliary will have its annual meeting at the Hotel Utah, where the annual banquet will be held Friday evening.

WEST VIRGINIA

Heart Association Meeting.—The fall meeting of the West Virginia Heart Association will be held at the American Legion Home, Parkersburg, October 2. The case presentation and round table discussion, beginning at 2 o'clock, will be followed by a joint dinner meeting with the Parkersburg Academy of Medicine at 6:30. Dr. A. Carlton Ernstene, Cleveland, will speak at the dinner on "Curable Types of Heart Disease." Further information may be obtained from Dr. Ray H. Wharton, secretary, 955 Market Street, Parkersburg.

Dr. Hobbs to Head Department.—Dr. Milford L. Hobbs, Fairmont, has been appointed head pathologist and clinical pathologist at the West Virginia University School of Medicine, Morgantown, beginning September 1. He succeeds Dr. Clement C. Fenton, who died May 28. Dr. Hobbs, a graduate of Washington University School of Medicine, St. Louis, 1931, was assistant professor of pathology at the University of Vermont College of Medicine, Burlington, before locating in Fairmont in 1946 as pathologist at the Fairmont General Hospital.

GENERAL

Grants for Allergy Research.—The American Allergy Fund is offering a number of grants for scientific research not to exceed $3,500 each year to individual investigators. Both medical and nonmedical scientists are invited to apply for grants. Preference will be given problems immediately related to allergy, although investigations in physiology, biochemistry, pharmacology, immunology, genetics and other basic sciences are solicited. Applications should be sent to the American Allergy Fund, 525 Erie Building, Cleveland 15, Attention: Scientific Council. President of the board of the American Allergy Fund, organized a little more than a year ago, is Dr. Jonathan Forman, editor of the *Ohio State Medical Journal*, and Dr. Anton J. Carlson, University of Chicago, is head of the Scientific Advisory Council.

Fellowship Available in Rheumatic Disorders.—New York University College of Medicine and the Fourth Medical Division of Bellevue Hospital have announced the one year nonresident Robert Trubek Fellowship in Rheumatic Disorders open to graduate physicians with at least two years of previous training in internal medicine or its equivalent. Preference will be given candidates with a background of biochemistry, biophysics or any of the basic sciences. The fellowship will combine supervised research and special clinical training in the rheumatic disorders under the direction of Dr. Otto Steinbrocker. It carries an annual stipend of $2,500, appointment renewable for an additional year by mutual agreement. Applicants for the 1947-1948 fall session should file applications not later than October 1, together with their educational and professional qualifications accompanied by two letters of recommendation from physicians under whose supervision previous assignments have been completed. Address the Robert Trubek Fellowship Committee, Fourth Medical Division, Bellevue Hospital, 492 First Avenue, New York 16.

Hospital Survey Published.—The Commonwealth Fund has published a volume on Hospital Care in the United States, which summarizes the entire findings of the intensive, two year survey of hospital facilities by the Commission on Hospital Care and lists 181 specific recommendations for the future development of hospital care in the United States. The commission estimates that there is need for an additional 195,000 general hospital beds besides the 25 per cent of existing hospital beds that are outmoded and should be replaced. It indicates that the public would be better served by about 40 per cent fewer but larger hospitals. At present building costs it would require about $1,800,000,000 to construct and equip hospitals necessary to meet the estimated current deficiency. The Commission on Hospital Care, a nongovernmental public service committee, was established in October 1944. Its purpose was to conduct the survey with particular reference to the part hospitals should play in the future life of the people. It was inaugurated by the American Hospital Association and financed by grants from the Commonwealth Fund, the W. K. Kellogg Foundation and the National Foundation for Infantile Paralysis. Full cooperation was given by the U. S. Public Health Service. Copies of the 700 page volume can be secured from the Commonwealth Fund, New York City, at $4.50 each.

Cancer Grants and Fellowships Available.—The Committee on Growth of the National Research Council, acting for the American Cancer Society, is entertaining applications for grants and fellowships. Applications for extension of existing grants in cancer research will be received until October 1, applications for new grants until November 1. Applications for fellowships and senior fellowships in cancer research may be submitted until December 1. Final decision on applications submitted during this period will be made in most cases soon after February 1. Fellowships may begin at any time determined by the committee, though ordinarily these also will take effect July 1. During the past two years the American Cancer Society, acting on the recommendation of the Committee on Growth, has awarded 176 grants and 47 fellowships representing a total expenditure of some $2,700,000. The committee will continue to recommend support of biologic and clinical research dealing broadly with phenomena relating to growth, typical or neoplastic. In the formulation of this program the committee will be guided, as in the past, by the advice of some 120 scientists grouped in twenty panels comprising its sections on biology, chemistry, physics, chemotherapy, clinical investigations and fellowships. Communications regarding grants or fellowships should be addressed to Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue N. W., Washington 25, D. C.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Division and State	Week Ended Aug. 30, 1947	Week Ended Aug. 31, 1946	Week Ended Median, 1942-1946	Total to Aug. 30, 1947	Total to Aug. 31, 1946	Total * March 16-Aug. 30, 1947	Total * March 17-Aug. 31, 1946
New England:							
Maine	4	4	1	15	15	12	15
New Hampshire	2	7	3	14	83	10	82
Vermont	6	0	0	20	17	12	13
Massachusetts	26	18	20	111	81	104	77
Rhode Island	18	5	1	78	18	77	18
Connecticut	13	3	20	45	39	42	31
Middle Atlantic:							
New York	53	89	89	298	544	262	§11
New Jersey	26	21	21	90	128	84	122
Pennsylvania	31	14	14	148	123	134	111
East North Central:							
Ohio	39	43	33	192	319	182	304
Indiana	7	27	22	51	134	35	129
Illinois	93	201	94	324	1,046	302	1,038
Michigan	59	87	18	185	400	161	392
Wisconsin	9	184	18	66	430	42	417
West North Central:							
Minnesota	19	208	11	105	1,820	92	1,819
Iowa	12	24	24	75	278	67	*269
Missouri	10	63	29	58	541	48	534
North Dakota	11	74	2	60	235	55	235
South Dakota	3	22	1	7	241	5	241
Nebraska	13	51	9	117	264	110	263
Kansas	4	48	15	53	461	35	457
South Atlantic:							
Delaware	28	1	3	99	9	99	9
Maryland	8	10	3	41	49	35	47
District of Columbia	1	4	4	6	12	4	11
Virginia	7	8	8	61	68	51	62
West Virginia	4	5	5	35	42	31	39
North Carolina	9	5	5	71	65	56	58
South Carolina	0	0	1	10	18	9	15
Georgia	4	8	6	43	109	36	101
Florida	3	10	2	64	447	39	398
East South Central:							
Kentucky	0	6	6	22	73	21	70
Tennessee	6	18	5	47	103	35	94
Alabama	1	24	2	34	312	21	309
Mississippi	3	20	3	33	206	16	189
West South Central:							
Arkansas	3	23	4	†48	224	†37	212
Louisiana	1	16	1	42	245	24	226
Oklahoma	1	14	14	34	233	23	227
Texas	3	23	23	128	687	103	659
Mountain:							
Montana	2	9	2	17	72	15	56
Idaho	12	2	1	79	12	69	12
Wyoming	0	14	2	11	75	8	74
Colorado	0	77	15	33	579	28	578
New Mexico	2	11	1	15	88	12	87
Arizona	3	7	1	26	74	23	71
Utah	0	11	11	7	55	2	49
Nevada	0	0	0	0	3	0	3
Pacific:							
Washington	11	28	19	77	192	69	159
Oregon	7	15	11	41	74	36	70
California	25	218	33	561	1,091	412	1,004
Total	602	1,780		†3,797	†12,434	†3,185	11,967
Median, 1942-1946			956	6,156		5,759	

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).
†Figures changed by corrected reports.

FOREIGN

Malaria Control in Greece.—The United Nations' World Health Organization, which is continuing malaria control measures in Greece begun by UNRRA, from January to June sprayed 15,250 Greek villages with DDT. Last year 4,005 villages received the spray treatment from UNRRA.

Typhoid in China.—A typhoid epidemic that has filled 20 per cent of the beds in four hospitals at Foochow, Fukien province capital, was reported August 16 by UNRRA's China office. The city of 350,000 has no public water supply. Seven water filtration stations are being constructed in an attempt to check the outbreak.

French Congress of Medicine.—The twenty-sixth French Congress of Medicine will be held in Paris, October 16-18, at the Faculty of Medicine under the chairmanship of Dr. André A. Lemierre, Paris. Presentation and discussion of papers on genetics will be given on Thursday, papers and discussions on antihistaminics on Friday and presentation and discussion of papers on pulmonary cysts on Saturday. Further information may be obtained from the Office of the Secretary, the Faculty of Medicine, Room Beclard, Street of School of Medicine, Paris.

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Deaths

J. Bayard Clark ✠ New York; born in Elizabeth, N. J., in 1869; Columbia University College of Physicians and Surgeons, New York, 1898; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; member of the Connecticut State Medical Society and the American Urological Association; member, past president and vice president of the American Association of Genito-Urinary Surgeons; formerly professor of urology at the New York Polyclinic Medical School and Hospital; specialist certified by the American Board of Urology; served during World War I; affiliated with the Greenwich (Conn.) Hospital, Elizabeth (N. J.) General Hospital, Doctors Hospital and the New York City Hospital; author of "Some Personal Recollections of Dr. Janeway"; died May 20, aged 78, of heart disease.

Hilbert Francis Day ✠ Cambridge, Mass.; born in Boston in 1879; Harvard Medical School, Boston, 1905; professor of clinical surgery at the Tufts College Medical School in Boston; formerly on the faculty of his alma mater; past president of the Cambridge Tuberculosis and Health Association; member of the founders group of the American Board of Surgery; member of the New England Obstetrical and Gynecological Society and the New England Pediatric Society; fellow of the American College of Surgeons; on the staffs of the Boston Dispensary, Cambridge Hospital, Boston Floating Hospital, Masonic Hospital, Shrewsbury, State Prison Colony Hospital, Norfolk, and the Massachusetts Women's Hospital in Boston; died May 16, aged 68, of heart disease.

Andrew Johnson Browning, Portland, Ore.; born in Washington, D. C., in 1881; George Washington University School of Medicine, Washington, D. C., 1908; associate clinical professor of ophthalmology at the University of Oregon Medical School; specialist certified by the American Board of Ophthalmology; served as president and secretary of the Western Ophthalmological Society; member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; on the staffs of the Doernbecher Memorial Hospital for Children and the Multnomah Hospital; a member of the board of trustees of the Good Samaritan Hospital, where he died May 20, aged 66.

Walter Ashby Frankland ✠ Washington, D. C.; born in Baltimore in 1867; Columbian University Medical Department, Washington, 1896; served overseas during World War I; formerly associated with the U. S. Public Health Service; past president of the Washington Medical and Surgical Society; member of the Association of Military Surgeons of the United States; at one time on the faculty of George Washington University School of Medicine; served on the staffs of the Casualty and George Washington University hospitals; died in the U. S. Naval Hospital in Bethesda, Md., May 30, aged 79, of lobar pneumonia and arteriosclerosis.

Benjamin Jaffee Birk ✠ Milwaukee; born in Michigan City, Ind., Aug. 17, 1894; Rush Medical College, Chicago, 1919; fellow of the American College of Physicians; member of the Association of Military Surgeons of the United States, Wisconsin Heart Association and the American Heart Association; on the staff of the Mount Sinai Hospital; served during World War I; during World War II served in the China-Burma-India theater for thirteen months and was awarded the Legion of Merit with oak leaf cluster for exceptional work in China in 1944; died in Thiensville, Wis., June 28, aged 52, of heart disease.

Harold William Campbell, Philadelphia; born in Bridgeport, Conn., April 1, 1905; University of Colorado School of Medicine, Denver, 1941; member of the American Medical Association and the Colorado State Medical Society; interned at St. Joseph's Hospital in Denver and served a residency at the Evangelical Lutheran Sanatorium in Wheat Ridge, Colo.; instructor in medicine at the University of Pennsylvania and clinic physician at the Henry Phipps Institute for the study, treatment and prevention of tuberculosis; died May 5, aged 42, of chronic nephritis.

Claude Miller Ament, Tulsa, Okla.; Barnes Medical College, St. Louis, 1901; at one time on the faculty of his alma mater; died May 10, aged 71.

Coral Ray Armentrout ✠ Houston, Texas; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904; fellow of the American College of Surgeons; served during World War I; formerly on the faculty of his alma mater; on the staffs of the Memorial Hospital and St. Joseph's Infirmary; died May 3, aged 69, of heart disease.

Lewis George Babcock, San Marino, Calif.; College of Physicians and Surgeons, Los Angeles, 1921; member of the American Medical Association; died in the Huntington Memorial Hospital, Pasadena, June 5, aged 51, of acute myelogenous leukemia.

Carlos M. Balli, Monterrey, Nueva Leon, Mexico; Universidad Nacional Facultad de Medicina, Mexico, D.F., 1918; died in May, aged 59.

Cobb Rutherford Barksdale, Blakely, Ga.; University of Georgia Medical Department, Augusta, 1900; member of the American Medical Association; served as mayor and member of the city council; for many years county physician; died in the Georgia Baptist Hospital, Atlanta, May 28, aged 70, of pneumonia and carcinoma.

Charles Wallace Bassett ✠ St. Louis; Washington University School of Medicine, St. Louis, 1908; died in Madison, N. Y., June 18, aged 72.

Oscar Israel Baumann ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1910; served during World War I; affiliated with the Mount Sinai Hospital and the Hospital for Joint Diseases; died May 17, aged 59, of coronary sclerosis with myocardial infarction.

Howell Llewellyn Begle ✠ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; for many years on the staff of the Children's Hospital; served as secretary of the Michigan Association of Industrial Physicians and Surgeons; past president of the Detroit Ophthalmological Society; died June 5, aged 70.

Gertrud Behrens, New York; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, 1919; member of the American Medical Association; died May 19, aged 53.

Sanford Blum ✠ San Francisco; University of California Medical School, San Francisco, 1896; formerly on the faculty of his alma mater; died May 27, aged 74, of heart disease.

George Washington Boner, North Madison, Ind.; Hospital College of Medicine, Louisville, Ky., 1906; member of the American Medical Association; served during World War I; formerly assistant physician at the Muscatatuck State School in Butlerville; since July 1945 superintendent of the Madison State Hospital, where he died May 30, aged 69, of coronary occlusion.

Robert Campbell Boothe, Fort Pierce, Fla.; Hospital College of Medicine, Louisville, Ky., 1905; member of the American Medical Association; member of the draft boards during World wars I and II; died May 20, aged 72, of cerebral hemorrhage.

Marcus Bossard, Spring Green, Wis.; Bellevue Hospital Medical College, New York, 1886; died May 8, aged 82, of carcinoma of the liver.

George Floyd Bott, Victor, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1906; died May 7, aged 70, of coronary thrombosis.

Kent Amos Bowman ✠ Johnstown, Pa.; Jefferson Medical College of Philadelphia, 1914; served as vice president of the Cambria County Medical Society; a medical officer in the U. S. Army during World War I; affiliated with Conemaugh Valley Memorial Hospital and Mercy Hospital, where he died June 4, aged 57, of carcinoma of the prostate with metastasis.

Harry August Brandes ✠ Bismarck, N. D.; Washington University School of Medicine, St. Louis, 1912; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past president of the North Dakota State Medical Association; served as a member of the state board of medical examiners; on the staffs of the Bismarck and St. Alexius hospitals; died May 12, aged 59, of multiple myeloma.

Nathaniel Perkins Breed, Douglaston, N. Y.; Harvard Medical School, Boston, 1901; died May 11, aged 70, of heart disease.

Ellen Martin Brimer, San Diego, Calif.; Gross Medical College, Denver, 1897; died May 5, aged 77.

Diedrich George Brunjes ✠ Chicago; the Hahnemann Medical College and Hospital, Chicago, 1910; served during World War I; on the staffs of the Chicago Memorial and Illinois Central hospitals; died May 17, aged 60, of coronary thrombosis.

Edward Henry Buffum, Manchester, N. H.; Middlesex College of Medicine and Surgery, Waltham, Mass., 1937, for many years affiliated with the Nassau County Sanatorium in Farmingdale, N. Y.; died June 25, aged 44.

Joseph E. Burnham, Wayne, Ohio; Cleveland Medical College, Homeopathic, 1895; died May 21, aged 82, of coronary thrombosis.

Alton Cook Campbell ✠ Raleigh, N. C.; University of North Carolina School of Medicine, Raleigh, 1910; served during World War I; member of the Raleigh township school board; for many years physician at the North Carolina State College; on the staff of the Rex Hospital; died June 12, aged 63.

Burg Chadwick, Smethport, Pa.; University of Buffalo School of Medicine, 1887; Jefferson Medical College of Philadelphia, 1888; member of the American Medical Association; for many years physician for the McKean County Home and the McKean County Jail; served on the staff of the Bradford Hospital; died May 8, aged 79, of carcinoma of the prostate.

Eben P. Clapp, Pasadena, Calif.; the Hahnemann Medical College and Hospital, Chicago, 1882; died in the Huntington Memorial Hospital May 8, aged 88, of bronchopneumonia and arteriosclerosis.

Walton Wheeler Cobb, Fort Worth, Texas; Kentucky School of Medicine, Louisville, 1895; past president of the Tom Green-Coke-Crockett Concho-Irion-Sterling-Sutton-Schleicher Counties Medical Society; served as city health officer of San Angelo, where he was on the staffs of the Shannon West Texas Memorial Hospital and St. John's Hospital; died in the Methodist Hospital May 17, aged 74, of uremia.

Robert Calvin Coomer, Richmond, Ky.; Kentucky School of Medicine, Louisville, 1902; member of the American Medical Association; died in the Pattie A. Clay Infirmary May 5, aged 73, of carcinoma.

Alfred G. Coughlin, Athens, Pa.; Baltimore Medical College, 1905; for many years president of the board of directors of the school district and physician for the local board of health; on the staff of the Robert Packer Hospital in Sayre; president of the Athens National Bank; director of the Athens Building and Loan Association and the chamber of commerce; died May 1, aged 63, of hypertensive cardiovascular disease.

F. W. Cox, Pocahontas, Ark. (licensed in Arkansas in 1903); died in the Baptist Hospital in Memphis, Tenn., May 8, aged 69, of heart disease.

William Nathan Crellin, Shohola, Pa.; Jefferson Medical College of Philadelphia, 1931; member of the American Medical Association; interned at the Frankford Hospital in Philadelphia; served as county medical director and as surgeon for the Erie Railroad Company; died May 5, aged 40, of injuries received when his automobile crashed against a tree near Monroe, N. Y.

George Hardin Curfman ✠ Denver; Northwestern University Medical School, Chicago, 1905; member of the House of Delegates of the American Medical Association in 1925, 1945 and 1946; fellow of the American College of Surgeons; past president of the Colorado State Medical Society; chief surgeon for the Denver and Rio Grande Western Railroad; on the staff of St. Joseph's Hospital, where he died June 24, aged 69.

Frank Curtiss Davis, Palo Alto, Calif.; Johns Hopkins University School of Medicine, Baltimore, 1899; fellow of the American College of Surgeons; served during World War I; died May 30, aged 73, of acute cardiac failure and arteriosclerosis.

John Spencer Davis, Dallas, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1908; affiliated with St. Paul's Hospital; member of the American Medical Association; served during World War I; died recently, aged 66, of heart disease.

Dayve Boris De Waltoff, Brooklyn; University of St. Vladimira Faculty of Medicine, Kiev, Russia, 1887; died June 19, aged 81, of heart disease.

Thomas Lawrence Disque ✠ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1892; assistant professor of urology at his alma mater; member of the American Urological Association; on the staffs of St. Francis, Woman's and Presbyterian hospitals; died May 7, aged 76, of carcinoma of the sigmoid.

David Cummins Donan, Morganfield, Ky.; University of Louisville (Ky.) Medical Department, 1907; member of the American Medical Association; formerly secretary of the Union County Medical Society; served during World War I; colonel, medical reserve corps, U. S. Army, not on active duty; died in Our Lady of Mercy Hospital May 16, aged 65, of cerebral hemorrhage.

John Joseph Donohue, Shamokin, Pa.; Jefferson Medical College of Philadelphia, 1911; member of the American Medical Association; served during World War I; died in the Temple University Hospital in Philadelphia, May 10, aged 62.

Joseph Alexander Doyle ✠ Greenville, Pa.; University of Pittsburgh School of Medicine, 1918; served during World War I; fellow of the American College of Surgeons; county coroner; affiliated with the Greenville Hospital; died in the Cleveland Clinic Foundation Hospital June 21, aged 56, of pneumonia following influenza.

John B. du Bose, Humble, Texas; University of Dallas Medical Department, 1902; member of the American Medical Association; died recently, aged 70, of chronic myocarditis.

H. Rolfe Du Puy, Winchester, Va.; University of Virginia Department of Medicine, Charlottesville, 1932; member of the American Medical Association; served as deputy state and county health officer of Garrett County in Maryland, health officer of Berkeley County in West Virginia and Worcester County in Massachusetts; died May 3, aged 40.

Edgar A. Farrow, San Diego, Calif.; Columbian Medical College, Kansas City, Mo., 1899; for many years affiliated with the Indian Service; veteran of the Spanish-American War; died May 7, aged 73, of coronary occlusion.

Samuel Arthur Flaherty ✠ Detroit; Detroit College of Medicine and Surgery, 1914; member of the American Urological Association and at one time secretary of the Detroit Branch; served with the Canadian Army during World War I; on the staffs of the Mount Carmel Mercy and Delray General hospitals; died in Lake Lure, N. C., May 8, aged 60, of coronary thrombosis.

Charles George Foertmeyer, Cincinnati; Medical College of Ohio, Cincinnati, 1895; member of the American Medical Association; died in the Deaconess Hospital May 7, aged 75, of carcinoma.

A. O. Fortney, Jewell, Kan.; Missouri Medical College, St. Louis, 1894; died in Beloit May 15, aged 81, of coronary occlusion.

John Russell Foshay ✠ Peekskill, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1909; served as a member of the county board of health and county coroner; on the staff of the Peekskill Hospital; died in Ossining June 14, aged 67, of coronary thrombosis.

Joseph Powel Franklin, Cumberland, Md.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1921; member of the American Medical Association; deputy state and county health officer of Allegany County; formerly director of the bureau of communicable diseases, Baltimore City Health Department; served during World War I and World War II; died in the Mount Sinai Hospital, Baltimore, June 15, aged 50, of carcinoma of the liver.

Harry Edwin Gabe, Indianapolis; Medical College of Ohio, Cincinnati, 1893; member of the American Medical Association; past president of the Indianapolis Medical Society; served on the city board of health; died in the Methodist Hospital June 14, aged 79, of aneurysm.

Jacques Goldberger, New York; Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa, Budapest, Hungary, 1911; affiliated with the Saratoga Hospital in Saratoga Springs; died in the Montefiore Hospital June 5, aged 58, of adenocarcinoma of the sigmoid colon.

Irvin Hilary Griffin ✠ Moundville, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1934; on the staffs of the Druid City and Stillman hospitals in Tuscaloosa; died in Tuscaloosa June 1, aged 38, of coronary thrombosis.

Harry Harold Halliwell ✠ Ilion, N. Y.; University and Bellevue Hospital Medical College, New York, 1901; died May 11, aged 67, of hernia, embolism, fecal fistula and prostatic hypertrophy.

Clarence C. Hampil, Brazoria, Texas; Louisville (Ky.) Medical College, 1892; member of the American Medical Association; past president of the Brazoria County Medical Society; received a medal and a certificate of merit for his work with the selective service board during World War II; at one time director of the First State Bank of Brazoria; died recently, aged 79, of cerebral hemorrhage and coronary occlusion.

Raymond George Earl Haymond, Waldron, Ind.; University of Louisville (Ky.) Medical Department, 1909; served during World War I; found dead June 20, aged 69.

Cecil Marvin Hitchcock, Moultrie, Ga.; University of Georgia Medical Department, Augusta, 1906; for many years county physician; examining physician for the selective service

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board during World War II; on the staff of the Vereen Memorial Hospital; died June 5, aged 63, of chronic nephritis and hypertensive heart disease.

Fred Garnt Hopkins ✠ East Peoria, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the staff of the St. Francis Hospital, Peoria, of which he had been president; past president of the sanitary board: died June 14, aged 71, of leukemia.

Charles Francis Hull, Carthage, Texas; Memphis (Tenn.) Hospital Medical College, 1899; member of the American Medical Association; served as president, secretary and treasurer of the Panola County Medical Society; for many years county health officer; died recently, aged 83, of encephalomalacia and arteriosclerotic heart disease.

Otto B. Kiehl, Pittsburg, Kan.; University of Kansas School of Medicine, Kansas City, 1907; member of the American Medical Association; past president of the Crawford County Medical Society; served as city health officer; on the staff of Mount Carmel Hospital; died May 10, aged 67, of acute coronary thrombosis.

John Joseph Krager, Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1922; died recently, aged 52, of coronary thrombosis.

John B. Marcotte, Lewiston, Me.; Laval University Faculty of Medicine, Quebec, Canada, 1899; member of the American Medical Association; affiliated with St. Mary's Hospital; died recently, aged 81, of carcinoma.

Bertie Mobbs, Honolulu, Hawaii; University of Louisville School of Medicine, 1910; also a graduate in pharmacy; served on the staffs of St. Francis, Queen's and Maternity hospitals; died recently, aged 70, of aneurysm of the abdominal aorta.

Edwin Corbin Neeb, Cross Plains, Texas; Baylor University College of Medicine, Dallas, 1947; internship appointment was Charity Hospital of Louisiana at New Orleans; died May 31, aged 22, of embryonal cell carcinoma.

Leroy S. S. Ott, Longdale, Okla.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1910; member of the American Medical Association and the Kansas Medical Society; served as health officer of Wichita County, (Kan.); died May 4, aged 59, of coronary thrombosis.

Harry Milton Pell, Brazil, Ind.; Indiana University School of Medicine, Indianapolis, 1912; member of the American Medical Association; served during World War I; at various times county coroner, county jail physician and on the staff of the Indiana State Farm Hospital in Greencastle; on the staff of the Clay County Hospital, where he died May 30, aged 56, of cardiovascular renal disease.

Paul Lange Phillips, Norfolk, Va.; Cornell University Medical College, New York, 1930; member of the American Medical Association, American Psychiatric Association and the Connecticut State Medical Association; served during World War II; died May 11, aged 42, of coronary occlusion.

Oscar Ignatius Polk ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1911; served as school director of the public schools of Braddock and on the staff of the Braddock (Pa.) General Hospital; died May 8, aged 59, of coronary occlusion.

Rose Pringle, New York; Trinity Medical College, Toronto, Ont., Canada, 1895; member of the American Psychiatric Association; for many years affiliated with the Bloomingdale Hospital in White Plains; died in Detroit May 9, aged 83, of heart disease.

Lenard L. Shlenker, Monroe, La.; Washington University School of Medicine, St. Louis, 1929; member of the American Medical Association; served during World War I and World War II; died May 5, aged 47, of cerebral hemorrhage.

Edward Augustine Stapleton ✠ Albany, N. Y.; Albany Medical College, 1904; also a graduate in pharmacy; served during World War I; died in the Memorial Hospital June 11, aged 66.

William Borden Thomas Jr. ✠ Amarillo, Texas; University of Tennessee College of Medicine, Memphis, 1932; health officer of Amarillo and Porter County; died May 3, aged 41, of heart disease.

Hartley W. Walker, Pekin, Ill.; Baltimore Medical College, 1895; member of the American Medical Association; served on the draft boards during World Wars I and II; on the staff of the Pekin Public Hospital; died June 5, aged 73, of coronary occlusion.

Otis Hillsman Whitlock, Richmond, Va.; University College of Medicine, Richmond, 1911; member of the American Medical Association; burned to death May 9, aged 60.

DIED WHILE IN MILITARY SERVICE

William Craig Flinn, Redwood Falls, Minn.; Harvard Medical School, Boston, 1943; interned at the Ancker Hospital in St. Paul; diplomate of the National Board of Medical Examiners; began active duty as a first lieutenant in the medical corps, Army of the United States, on Jan. 5, 1944; later promoted to captain; died in France July 7, 1945, aged 27, of a skull fracture received in a vehicle accident.

Jay Curtis Joslyn, Sandusky, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1945; interned at the Naval Hospital in San Diego; began active duty as a lieutenant (jg) in the medical corps of the U. S. Naval Reserve on Sept. 2, 1945; died March 20, 1946, aged 24, of myelogenous leukemia.

Herman George Klamka, Chicago; University of Illinois College of Medicine, Chicago, 1940; interned at the Cook County Hospital; captain in the medical corps, Army of the United States; killed in India May 25, 1944, aged 29, in an airplane crash.

Braulio Rodriguez Martinez, Ponce, P. R.; Howard University College of Medicine, Washington, D. C., 1942; interned at the Freedmen's Hospital in Washington, D. C.; began active duty as a first lieutenant in the medical corps, Army of the United States, on July 3, 1943; died in the Fitzsimmons General Hospital in Denver April 24, 1945, aged 29, of tuberculosis of the spine.

Reuben Jordan Maxwell, Sulligant, Ala.; Washington University School of Medicine, St. Louis, 1939; interned at St. Louis City Hospital, where he served a residency; began active duty as a first lieutenant in the medical corps, Army of the United States, in August 1941; promoted to captain and major; died while aboard the steamship *Haskell* Oct. 10, 1945, aged 32, of poliomyelitis.

Howard Mitchell, Toronto, Ont., Canada; born in New York Nov. 19, 1917; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1941; interned at the Franklin Hospital in San Francisco; began active duty as a first lieutenant in the medical corps, Army of the United States, in August 1942; assigned to the medical detachment 376th Infantry, 94th Infantry Division at Fort Custer, Mich.; in October 1942 transferred with that division to Camp Phillips, Salina, Kan., where he served until July 1943, when he was assigned to duty with the 68th Medical Regiment at Camp Forrest, Tenn.; promoted to the grade of captain in November 1943 and assigned to duty with the 618th Clearing Company; died aboard a U. S. Army transport in the European area Dec. 12, 1943, aged 26, of acute lobar pneumonia.

Samuel Alfred Murphy, Wilkinsburg, Pa.; University of Illinois College of Medicine, Chicago, 1920; began active duty as a captain in the medical corps, Army of the United States, in April 1944; served with the Veterans Administration Facility in Pittsburgh; died in the Deshon General Hospital, Butler, Pa., June 18, 1945, aged 56, of perforation of the esophagus.

Robert Kazuo Ota, Milwaukee; Marquette University School of Medicine, Milwaukee, 1939; interned at St. Luke's Hospital and the Johnston Emergency Hospital; lieutenant, medical corps, Army of the United States; died in the Madigan General Hospital in Tacoma, Wash., Jan. 16, 1946, aged 35.

Nicholas Polites, Atlantic City, N. J.; Emory University School of Medicine, Atlanta, 1936; served an internship and residency at the James Walker Memorial Hospital in Wilmington, N. C.; interned at St. Joseph's Infirmary in Atlanta; began active duty as a first lieutenant in the medical reserve corps of the U. S. Army in 1941; promoted to captain in February 1942 and major in October 1943; killed in Germany Nov. 8, 1945, aged 38, in an airplane crash.

Morris Ruchelman, Brooklyn; Louisiana State University School of Medicine, New Orleans, 1942; interned at the Touro Infirmary in New Orleans; entered active duty in the medical corps, Army of the United States, as a first lieutenant in April 1943; promoted to captain; killed in an airplane accident in Sicily Nov. 9, 1945, aged 28.

John Hurst Wenger, Terre Hill, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1941; interned at the Philadelphia General Hospital in Philadelphia; captain, medical corps, Army of the United States; died in France June 16, 1945, aged 30.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 2, 1947.

The Outbreak of Infantile Paralysis

The outbreak of infantile paralysis, described in a previous letter, continues. New cases are announced daily both in London and throughout the country. The incidence of the disease is higher than at any time during the last thirty-five years, the period for which records have been kept. There are 112 confirmed or suspected cases in the London hospitals. As the peak period of the disease is usually in the autumn, it is thought that there may be worse to come. Owing to the outbreak, 150 London children who were to have been included in a party of 500 from industrial districts of England and Scotland going to Belgium on vacation next month have had their trip canceled. For the week ended July 26 the number of cases in Britain is expected to be not fewer than 300, compared with 177 in the week before and with the highest weekly figure of 85 in previous years. The cases are occurring in different parts of the country, and there is nothing to suggest spreading from one center. The disease is proving difficult to control because it is not always identifiable in cases of mild and indefinite illness and because it may be harbored by healthy carriers whom it is impossible to recognize. The holiday exchange of children between Britain and the European continent, which had been arranged by the World Friendship Association, has been stopped. It has been suggested that all bathing should be stopped, because of the danger of acquiring the virus.

Answering questions in the House of Commons, the minister of health stated that the present rate had never been exceeded in this country since the disease became notifiable. The best precautions were personal hygiene, avoidance of close congregation of young people and early medical advice if a young contact of a known case showed any mild or indefinite illness. One of the most discouraging features of the incidence of the disease was that it had reached its peak earlier in the year than usual. There was no evidence of the slightest connection with malnutrition. Notifications of the disease for the week ended July 26 in England and Wales numbered 302 compared with 177 in the previous week, and there is nothing to suggest that the peak has been reached; the figures suggest a further rise. Notifications reached double figures for the week ended July 26 in London (51) and in seven English counties. Although the cases are widely scattered, the incidence is by no means even. The mechanism of direct spread is still uncertain, but it has become increasingly evident that spread is usually from person to person following close contact with a case of abortive or paralytic disease during a relatively short period of infectivity, which begins a few days before any sign of illness. The latest figures published show 448 cases for the week ended August 2, an increase of 146 on the previous week and the highest for any week of the outbreak. Of these 53 occurred in London.

The British Medical Association and the National Health Service Act

For some time negotiations have been taking place between the government and the British Medical Association with regard to the National Health Service, which is now law. Concern is felt in the profession as to these negotiations because, as is usual, they have not been disclosed while in progress. At the annual representative meeting of the association, recently held in London, the chairman of the council, Dr. H. G. Dain, presented a report on the progress of the talks. The minister of health, Mr. Bevan, agreed to enter into discussions of a comprehensive character in which the possibility of fresh legislation was not ruled out. Subcommittees of the negotiating committee of the association were set up to deal with various sections of the act under such headings as specialists and consultants, hospital service, general practice, public health, superannuation, ophthalmic services and mental services. Discussions took place between these subcommittees and the officers of the ministry. These discussions were comprehensive, and no attempt was made to limit them or tie the subcommittees down to regulations only. They stuck to their principles and argued in favor of them as vigorously as they could. They did not make concessions or retreat from any position taken up. No fear need be entertained that the discussions involved acceptance of things of which the association would not approve. A detailed report on the subject will later be given to the representative body of the association. In order to ensure that the arguments used to the officers of the Ministry of Health may not reach the minister in a milder form, he will be offered a report in writing prepared by the subcommittees. Further, it is proposed to ask him to talk personally with some of the subcommittees—those representing consultants and specialists, general practitioners and public health.

A resolution was introduced at the meeting of the representative body asking the negotiating committee to make an early report of the progress and discussions with the minister, because of the uneasiness felt in the profession as to what was going on behind closed doors. After discussion, in which the chairman of the council of the association pointed out that there was no alteration of the position to report and would not be until the minister's reply was forthcoming, the resolution was put to the meeting and lost by a large majority.

International Congress of Physicians

Since the end of the war London has become almost the sole meeting place of international congresses. In September there will be a medical one, to be followed almost immediately by a surgical one.

An international conference of physicians is to be held at the Royal College of Physicians, London, on September 8, to continue daily at various institutions and hospitals in London until September 12. In addition to the scientific program there will be a social one, which will include a government luncheon, a banquet at the Guildhall and a reception at the College. Admission is confined to medical practitioners and is by invitation only. Application for admission must be made to the organizing secretary, Dr. G. B. Mitchell-Heggs, in care of Royal College of Physicians, Pall Mall East, London, S. W.

Section of Cardiology: Surgery of Congenital Heart Disease, Pulmonary Heart Failure (with Section of Disorders of the Chest). Use of the Phonocardiogram in Clinical Cardiology. Repetitive Paroxysmal Tachycardia.

Section on Disorders of the Chest: Transient Pulmonary Infiltrations. Pulmonary Heart Failure. Sarcoidosis (with Section of Dermatology). BCG Vaccination.

Section of Dermatology: Vitamin D in the Treatment of Cutaneous Tuberculosis Sarcoidosis.

Section of Neurology: Malnutrition of the Nervous System. The Role of the Pyramidal System in Movement. Spinal Fluid and Cerebral Fluid—A Comparison. The Functions and Connections of the Frontal Lobes (with Section of Psychiatry).

Section of Pediatrics: Surgery of Congenital Heart Disease. Hemolytic Anemia. BCG Vaccination (with Sections of Social Medicine and Disorders of the Chest).

Section of Psychiatry: Genetics in Relation to Mental Deficiency. Psychodynamics of Depression. Social Surveys (with Section on Social Medicine). The Functions of the Frontal Lobes (with Section of Neurology).

Section of Social Medicine: Care of the Aged and Infirm. Social Medicine in the Curriculum. Social Surveys. BCG Vaccination.

Section of General Medicine: Penicillin. Infective Hepatitis. Pain.

International Congress of Surgeons

The twelfth congress of the International Society of Surgery will be held in London from September 14 to 20. The secretary is Mr. H. W. S. Wright, 9 Weymouth Street, London, W. 1. Applications for membership in the society may be made at any time.

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BELGIUM

(From Our Regular Correspondent)

Aug. 1, 1947.

Treatment of Persistent Ductus Arteriosus and Coarctation of Aorta

At the society of surgery Dr. G. Coryn reported observations made during a stay in Stockholm with regard to the technic used by Dr. Clarence Crafoord in the surgical treatment of persistent ductus arteriosus and coarctation of the aorta.

In cases of persistent ductus arteriosus, Crafoord found retardation of statural development in only 10 per cent of his patients. He thinks that, in view of the poor prognosis, the diagnosis of the persistence of the ductus constitutes an absolute indication for operation. Seventy patients without complications have been operated on with 1 death. Of 7 patients with malignant endocarditis, 5 were successfully operated on and 2 died.

In describing the technic, Crafoord rejects the anterior approach. Contrary to Sellors, Crafoord thinks that the caliber and length of the ductus arteriosus varies in different subjects and that they decide the mode of treatment. If the duct is long and wide, the double ligature is employed and several drops of a 60 per cent dextrose solution are injected between the ligatures. If the duct is very short and very large, it is necessary to interrupt the flow of the blood in the aorta between two clamps, partially in the pulmonary artery, sectioning the duct and suturing the two gaps.

Crafoord thinks that coarctation of the aorta is related to the involution of the ductus arteriosus. The diagnosis is based on the chief sign of disparity between the arterial pressure of the upper and lower extremities. The prognosis being unfavorable, indication for surgery is absolute. It is, however, feasible only if the narrowing is located upstream to the subclavian artery. End to end suture must be done after resection of the narrowed constricted portion. Fifteen patients have been operated on with a single death.

Quinine in the Belgian Congo

Bruxelles-médical recalls that it was one of the very first to concern itself with the production of quinine in the Belgian colonies in Africa. Since then this question has progressed rapidly. The invasion of the Netherlands Indies by the Japanese gave to the Congo quinine a place of first importance. The Belgian Congo was in effect the only African colony where the cultivation of cinchona was intensified to the point of undertaking to manufacture of quinine right there. The work was consigned to a governmental directorate controlling not only the manufacture and the sale but also the purchase of the cinchona bark from the planters. At the return to more normal conditions the present organization will be completely modified. Negotiations to this effect are going on between the minister of colonies, the planters and interested organizations. Agreements in principle have been reached. The quinine office and the directorate of the Congo will be replaced by a cooperative joining all those interested with the participation and under the control of the government. The manufacture of quinine will be continued in the Congo, where the cultivation of cinchona will be intensified to a maximum.

Children and the War

Lust presents a study in *Scalpel* on the influence of the food supply during the German occupation on the birth rate, the infant morbidity and mortality and maternal lactation. He interprets the statistics on the birth rate and infant mortality during the German occupation on the basis of an investigation in forty infant consultation centers in urban and rural localities of Walloon and Flanders. The number of births decreased during the occupation from 130,000 in 1939 to 100,000 in 1941; the birth rate then decreased from 170,000 in 1913 to 85,000 in 1917.

The infant mortality rate, which during the years preceding the invasion remained stationary at about 8 per cent, increased at least at the beginning of the occupation, reaching above 9 per cent. This rather high infant mortality cannot be attributed to the frequency of congenital debility of the newborn, to the poor nutrition of the nurslings, which remained satisfactory throughout the entire war, to acute infectious diseases, which are not abnormally frequent, or to tuberculosis.

Too many of the mothers do not make the necessary effort to nurse their newborn. The percentage of infants being entirely or partly maintained by breast feeding at the time of their admission at nursling consultation centers at the age of 6 weeks was only 35 per cent in 1939. This percentage exceeded 50 per cent at the onset of the occupation; since then this percentage has tended to diminish every year.

Anilinism

Merevelde reported in the *Revue médicale de Louvain* a number of cases of aniline intoxication among workers and other persons. Among the latter there was a child aged 9 months who was found in deep cyanosis, with attacks of vomiting. The child had been in a kitchen where the mother had dried a brown leather garment which had been dyed with aniline dye. Merevelde discusses the chemical properties of aniline, and symptoms of acute and chronic intoxication. He cites personal investigations to which he exposed himself with the aim of clarifying the pathogenesis of the intoxication (variations in the hemogram, the iron content of the plasma, the rapidity of the sedimentation speed and the changes in vitamin C). In cases in which acute and severe cyanosis or coma exists, the chief aim of treatment should always be the prompt employment of drugs which augment the respiratory capacity, such as nikethamide. In extremely severe cases venesection is indicated as well as transfusion and injection of methylene blue. The further treatment must aim to counteract the anemia.

Professor A. P. Dustin

The Royal Academy of Medicine paid homage to Professor A. P. Dustin. The funeral eulogy was delivered by Professor Dalcq, who recalled how, as prorector of the university and as president of the faculty of medicine, the eminent scientist was arrested in the tragic hours of the Nazi occupation and incarcerated for three months at the citadel of Huy, where each evening the quarters of the hostages were transformed into a seminary of studies, of which Dustin was the most enthusiastic supporter. He wore himself out like a true patriot and was proud of the salutary effect which his attitude had on the oppressed population. His sudden death after an afternoon of microscopic studies was a magnificent example of civic and scientific courage. Corresponding member of the academy since 1921 and titular since 1931, A. P. Dustin, son of Pierre Dustin, communal administrator to whom Brussels chiefly owes the creation of its port, and of an intelligent and cultured mother, was at the same time an eminent neurologist, histologist and embryologist. After research work in the laboratory of Professor Prenant and in that of Roscoff, he became professor at the age of 25 years. During World War I he distinguished himself by his work in neurosurgery. For twenty years he occupied the chair of neuropsychology at the War College. One is astounded at the extent and importance of his studies on cancerology, the karyoclastic poisons, the technic of biopsies, histophysiology, his numerous conferences in Belgium and in foreign countries, the great number of students that surrounded him in his laboratory, the variety of his literary and artistic culture, his administrative competence and his rare talent in lecturing and persuasion.

Correspondence

MEDICAL MISSION TO AUSTRIA

To the Editor:—It occurred to the director of the Medical Mission to Austria that a few comments on our experience of the past five or six weeks might be of interest to readers of THE JOURNAL. The mission has been operated by the Unitarian Service Committee under the auspices of the World Health Organization of the United Nations. It represents the first such mission to be sent by the World Health Organization into a foreign country for the purpose of exchanging ideas with university groups. Its eight physicians from the United States and two from Switzerland have held discussions on medical progress in physiology, pharmacology, cancer research and genetics, internal medicine, infectious diseases, neuropsychiatry, general surgery, neurosurgery and anesthesia. At the invitation of the Austrian minister of public welfare and of the various faculties, the group has been received at Vienna, Graz and Innsbruck. Formal receptions have been followed by a series of prepared lectures and by informal discussions with individual groups or with individual faculty members. The facilities of the state and of the various Allied commands have been put at our disposal; and important help has been freely given by the United States legation in Vienna and by Colonel Cottrell, the World Health Organization representative in Austria.

Despite differences in language and in academic traditions, we have had few real difficulties once the nature of the mission became understood. University doors have been opened wide, and in most instances there has been free and informal discussion. The free interchange of ideas has been stressed and accomplished. Because of the isolation of the Austrian clinics from the outside world during the war, we have been able to present new ideas and new procedures which, in the main, have been welcome. Advances in surgical procedure and anesthesia have been demonstrated and have created wide interest. Newer physiologic concepts and recent clinical developments similarly have been received usually with enthusiasm.

As material difficulties exist, owing to lack of equipment, drugs and food, many therapeutic measures have met with somewhat qualified enthusiasm. The practical realities of an impoverished and occupied country preclude easy acceptance of scientific measures that people in the United States take for granted. Nevertheless with few individual exceptions an interest has been encountered throughout our stay. All of us have made new professional friendships that may presage a future mutual interchange of ideas of real value.

The immediate and practical result of a mission such as this is less clear. In a country where fear and uncertainty are universal, where nutrition is marginal and where the necessities of life are difficult to obtain, stimulating scientific thinking can be accomplished only by intense personal effort and sacrifice. Austria and Austrian physicians are acutely aware of the immediate problems of political and physical survival that are almost insuperable. It is not surprising, therefore, that at times we have encountered apathy and discouragement and a concern for the immediate present.

In the universities the remaining professors are overworked. The student bodies are so large that they are unwieldy and teaching for the most part must be purely didactic. Supplies of the simplest nature are so limited that only the simplest procedures can be carried out in most instances. Deficiencies in drugs are everywhere apparent, and makeshift therapy which is frequently ineffective may represent the only possible approach to medical problems. Special diets with adequate caloric and protein content are practically unobtainable. Medical literature from 1938 to the present is notable for its absence.

The immediate situation is one of great difficulty, and no one is more aware of this than the majority of the faculty members. The most serious lack in the immediate future is the large number of only partially trained younger men in all departments of the medical schools. Losses by war, political and racial purges and displacements have left a large number of important subordinate positions and some major posts that can be filled satisfactorily only after the lapse of years. In spite of difficulties, many of the abler men are carrying a tremendous overload of teaching and practice with a courage and devotion to academic traditions that is inspiring.

The experience of the mission as far as its members are concerned has been of great value. We have proved, we think, that a sympathetic approach by experienced, trained men can meet with a friendly reception in spite of traditional difference of thought and in spite of material and psychologic differences inherent in a postwar situation. The practical contributions of the mission are difficult to evaluate at close range but are of real magnitude. To ourselves and to our Austrian hosts this mission has effected an exchange of intangible values that may be of great importance.

CHESTER M. JONES, M.D., Innsbruck, Austria.

DERMATITIS DUE TO QUINACRINE HYDROCHLORIDE (ATABRINE)

To the Editor:—The paper by T. W. Nisbet in THE JOURNAL May 31 might be open to criticism on one small point on page 447, where one finds "It has been stated that this symptom complex did not occur in the Mediterranean area though certain units were in malaria-infested districts and the troops were taking quinacrine hydrochloride. However, this is not the case, and several examples of the lichenoid type of eruption occurring in British soldiers have been presented before the Section on Dermatology of the Royal Society of Medicine, although the causative factor of quinacrine hydrochloride was not recognized."

In September and October 1943 in Algeria a series of both the lichenoid and eczematous types of drug eruption due to quinacrine hydrochloride were observed and discussed by Major L. M. Nelson, M. C., A. U. S., Major H. C. Hair, M. B. E., R. C. A. M. C., and myself. At this time we considered the possibility of this strange rash being either a multiple hypovitaminosis or an eruption due to mepacrine, but the patients could not be kept under observation, as the three of us were transferred to Italy.

We saw a considerable number of men suffering from similar manifestations in Italy and discussed its etiology with Major R. N. Buchanan, M. C., A. U. S. In 1944 Major Hair and I reported on the dermatosis to the War Office in London, but publication was withheld until the end of 1946. This report, without any alterations, was published in the *British Journal of Dermatology and Syphilis* (**58**:263, 1946). Major Nelson similarly forwarded a report which was published in the *Archives of Dermatology and Syphilology* (**55**:13 [Jan.] 1947).

As Dr. Nisbet's paper was read in July 1946 before the Section on Dermatology and Syphilology of the American Medical Association, he could not possibly have been aware of the article by Hair and myself, which was not published until November/December of that year. It seems only right to explain that dermatologists in the Mediterranean area were not mentally asleep at their posts and had recognized these cases about the same time (if not before) as the dermatologists in the Pacific.

G. A. GRANT PETERKIN, M.D., Edinburgh, Scotland.
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Medical Motion Pictures

FILM REVIEWS

The Technic of Atraumatic Convulsive Therapy. Prepared in 1947 by Matthew Brody, M.D., Department of Neurology, Jewish Hospital and the Division of Neuropsychiatry, Brooklyn Hospital, Brooklyn. 16 mm., color, silent, 400 feet (one reel). Showing time sixteen minutes. Procurable on loan from the Author: 41 Eastern Parkway, Brooklyn 17.

This film begins by illustrating the induction of an electroshock convulsion in a woman aged 52 diagnosed as suffering from an "involutional melancholia." The technic first shown is purported to be "orthodox," yet the patient is treated fully clothed and apparently corseted; also she is made to lie on a soft couch, and her convulsive movements are restrained only by the physician and a nurse. Subsequent scenes illustrate what are represented as improvements in this technic; namely, 200 to 300 mg. of sodium pentothal is administered intravenously to diminish fear and resistance, and this is followed by the immediate injection of 0.5 to 0.75 unit of intocostrin (an active ingredient of curare) to diminish the intensity of the muscular contractions. Three or four minutes later, when the patient can no longer raise her head, the current is passed through the cranial electrodes and breathing during the ensuing convulsion is facilitated by the insertion of a rubber airway. These technics are shown in the treatment of a young man labeled "Dementia Precox, Catatonic Type," a woman aged 65 with an "Agitated Depression" and [sic] arteriosclerosis with aortic dilatation, and finally in a girl aged 17 years with hebephrenia and active pulmonary tuberculosis.

The scenes are well photographed and clearly subtitled, although there is unnecessary preoccupation with details such as the filling of syringes and the mode of venipuncture. The great defects in this film, however, lie not in its subject matter but in its basic orientation and intent. The title of the film is misleading, since evidence is accumulating that (*a*) the passage of a 60 cycle alternating current through the brain for 0.3 to 0.5 second is inevitably traumatic to cerebral tissues, and (*b*) such treatment has little or no lasting curative value in schizophrenia; indeed, electroshock is definitely contraindicated in many cases so diagnosed. The film is very remiss in neglecting to emphasize the dangers and complications inherent in the intravenous administration of powerful drugs such as pentothal and curare, and the great care that must be used in administering electroshock to patients with cardiovascular, pulmonic and other systemic diseases. On the contrary, the film as a whole and the concluding subtitles in particular convey the impression that, if the modifications of technic are employed as illustrated, electroshock therapy can be given to almost any one in an office anteroom, with little or no danger of serious complications. Neuropsychiatrists experienced in the field know better; but if the film is addressed to the general practitioner it conveys dangerous misinformation. For this reason the film cannot be recommended for general distribution.

Ether for Anesthesia. Produced in 1946 by Audio Productions, Inc., New York. 16 mm., black and white, sound, 750 feet (one reel). Showing time twenty-one minutes. Procurable from Mallinckrodt Chemical Works, St. Louis 7.

This excellent motion picture presents in an interesting fashion the detailed history of the chemical production of ether and a brief view of the contrast between its present day application in anesthesiology and its use in Morton's crude inhaler a century ago. A considerable part of the film is devoted to the evolution of methods of distillation from the times of Aristotle and Pliny, through the first synthesis of ether in 1540 by Valerius Gordus to the very modern chemical plant with its intricate methods of production, purification and safe packaging of ether. The photography and general treatment are excellent.

This film should be of value to chemists and pharmacists and be useful in a teaching program in those fields. It also has application in the presentation of the history of medicine. It is a useful film in the training of anesthesiologists.

The Use of Sulfathalidine in Chronic Ulcerative Colitis. Prepared by Michael H. Streicher, M.D., University of Illinois College of Medicine. 16 mm., color, sound, 650 feet (one reel). Showing time eighteen minutes. Produced in 1946 by Audio Productions, Inc., New York. Procurable on loan from Sharpe and Dohme, Inc., Philadelphia.

The film depicts the story of one form of chronic ulcerative colitis rather well. It fails to differentiate between this and the other forms of chronic ulcerative colitis, and in the pathologic description the ulcers which have always been considered to be of the secondary type are described as being the primary ulcers of this condition. The material is well prepared, and the emphasis on laboratory control is well taken.

The film has good teaching value, but there may be too much emphasis on some things. The Paulson and other personal references might well be omitted. More emphasis could be laid on the fact that this is only one form of therapy employed as a part of a large armamentarium used in the treatment of this disease.

The film could readily be used to give an audience a general conception of ulcerative colitis. It would be more suitable for hospital personnel such as nurses, technicians and attendants than for presentation before medical students and medical societies. This statement is made because of the stress laid on the appearance of patients and the rather general description of this disease rather than the more specific detailed description. The color photography is excellent.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Sept. 6, page 53.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Various centers, Sept. 15-17. *Part III.* Durham, N. C., Oct. 21-23. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: Part II. *Oral.* Cleveland, Oct. 5-11. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Part II. Written.* Various centers, Sept. 15. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Oct. 8-10. Asst. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Feb. 1. Sec., Dr. W. J. German, 310 Cedar St., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I. Written.* Various Centers, Feb. 6. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 6-12. Sec., Dr. S. Judd Beach, 704 Congress St., Portland, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Part II. Chicago, Jan. 22-23. Final date for filing applications is Sept. 15. Sec., Dr. F. M. McKeever, 1136 W. Sixth st., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 7-11. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 24-25. Final date for filing application is Sept. 15. Sec., Dr. Robert A. Moore, Euclid Ave. and Kingshighway, St. Louis 10.

AMERICAN BOARD OF PEDIATRICS: Dallas, Dec. 5-7. Philadelphia, Jan. 9-11. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines 9.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Louis T. Byars, 508 N. Grand Blvd., St. Louis.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, December. Final date for filing application is Sept. 15. Sec., Dr. Francis J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia 2.

AMERICAN BOARD OF UROLOGY: Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Harry Culver, 1409 Willow St., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Elements of Damage Which May Be Considered.—The plaintiff sued for damages alleged to have resulted from the failure of the defendant physician to attend her during a miscarriage. From an order granting the defendant's motion for a nonsuit, the plaintiff appealed to the Supreme Court of New Hampshire.

The defendant was engaged to furnish the plaintiff necessary care and treatment during her pregnancy. Three months prior to the time the child was expected the plaintiff commenced to flow. On advice of the defendant physician the plaintiff remained in bed, and in a few days the flowing had ceased and the plaintiff felt well again. A few days later, however, at about 4 o'clock in the morning, the plaintiff awoke in pain. Without knowing their nature she was having labor pains, and the child was born between 12 and 1 o'clock. According to the plaintiff's evidence, her husband telephoned the defendant physician about 9 o'clock in the morning to come and not until a fourth call informing him that a miscarriage had taken or was taking place on the toilet did the doctor arrive.

In discussing the question of damages, the court said that damages cannot be given for the mere fact of the miscarriage. The evidence indicated that it would have occurred anyway. Nor can they be given for the physical and mental suffering that the wife would have endured under the usual circumstances that would have accompanied the miscarriage. The plaintiff is entitled to recover, however, for any and all pains of childbirth and of the following bodily conditions that were not prevented or eased because of the negligent failure of the physician to attend or prescribe. "There may be a recovery for the increased physical and mental suffering the wife endures on account of the nonattendance of a physician. . . ." I Sutherland Damages 4th Edition, 352. If the defendant had been in attendance, the child would have been born in bed, narcotics or other medicines could have been prescribed to relieve the pains of the mother and other medical care of her taken. The mere assuring presence of the physician at such a time would have been a comfort to which the plaintiff might be found entitled. The defendant argues that the wife cannot have damages for grief over the manner in which the child was born or for anticipation of it, which anticipation did not exist. This is true, concluded the court, but she may recover for injured feelings attending the happening of the birth in the way that it did. Present mental suffering due to the immediate realization of what is occurring or has occurred that is not grief in retrospect is compensable.

The judgment in favor of the defendant physician was reversed and a new trial ordered.—*Mehigan v. Sheehan, 51 A. (2d) 632 (New Hampshire, 1947).*

Liability of Hospital for Injuries to Unattended Patient.—The plaintiff sued the defendant hospital for damages for injuries alleged to be due to the defendant's negligence in failing to provide him with the services of nurses, orderlies or other attendants commensurate with his known physical condition and needs. From a judgment in favor of the plaintiff the defendant appealed to the Supreme Court of Appeals of Virginia.

The plaintiff entered the defendant hospital as a pay patient for the purpose of having a cataract removed from his right eye. The day following his entry, the cataract was successfully removed and he was returned to his room in the hospital. The room to which the plaintiff had been assigned had no separate bath or toilet, and he had been instructed both by his physician and by the hospital attendants that when he desired to answer a call of nature he should ring for a nurse, who in turn would dispatch to him an orderly who would attend to his needs through the use of a bed pan in his room. He was cautioned that he should not attempt, without the assistance of an orderly, to get out of bed and attend to his needs in this respect. A few nights later, between 9 and 10 o'clock, the plaintiff felt the urge of an impending bowel movement. In accordance with the instructions previously given him, he signaled for a nurse by pressing the nearby electric button which illuminated a red signal light above the door. After waiting for a period of from ten to fifteen minutes, the plaintiff turned off the signal light and flashed it on again. No one came, however. In the meantime his discomfort and pain had become acute. To use his own words, "I felt that I would have an accident if I didn't do something." He therefore arose from the bed and procured the bed pan, which was on a chair in his room. The door leading from his room into the corridor was opened and people were passing back and forth; consequently he felt some embarrassment in undertaking to use the bedpan in the room. He walked toward what he thought was a washroom in the corner of his bedroom and opened the door, hoping that he might retire there and relieve himself, but found that it was too small for the intended use. He then closed the door of the washroom and turned away and, as he did so, his foot slipped and he fell, fracturing his hip.

The hospital contended that the evidence fell short of the legal requirements in two respects: (1) It failed to show that the defendant, or any of its employees, was guilty of negligence, and (2) it shows that the proximate cause of the plaintiff's injury was his own voluntary act in undertaking to attend to his own needs when he knew, or ought to have known, that he was in no condition to do so.

The degree of care exacted of a private hospital, conducted for profit, to their patients "is such reasonable care and attention for their safety as their mental and physical condition, if known, may require, and should be in proportion to the physical or mental ailments of the patient, rendering him unable to look after his own safety."

The troublesome question presented to us, continued the court, and that most seriously pressed, is whether the negligence of the hospital in failing to heed the plaintiff's call and in failing to attend to his needs was the remote cause, and his own act in getting out of bed and attempting to administer to himself was the direct and proximate cause of his fall and consequent injuries. An intervening cause, said the court, does not operate to exempt a defendant from liability if that cause is put into operation by the defendant's wrongful act or omission. Tested by this principle, the court continued, we think the jury was fully warranted in finding that the plaintiff's action in attempting to attend to his needs under the circumstances was not a superseding cause of his injury but was merely a circumstance in a continuous sequence of events—that is, a connecting link between the negligence of the hospital and his injury. The intervening act of the plaintiff was put into operation by the hospital's wrongful act or omission. His act was "a normal response to the stimulus" of the situation created by the hospital's negligent conduct. When the hospital attendants failed to respond to his call and administer to his needs, it was both natural and probable that he would undertake to relieve himself of the painful and embarrassing situation in which he had been placed by the primary act or omission of the hospital. Moreover, the hospital attendants knew, or should have known, that as a consequence of their neglect of his needs the plaintiff probably would undertake to get out of bed and wait on himself. Both the nurse and an orderly said that he had done so on other occasions. An intervening cause will not be deemed to have broken the causal connection if the intervening cause was foreseen or reasonably might have been foreseen by the wrongdoer. The plaintiff's conduct was involuntary. He was driven by pain and natural impulse to get relief by waiting on himself. His situation was akin to that in which a person put in peril by the negligent act of another, and in the instinctive effort to escape therefrom, suffers injury. In such a situation the negligent act is deemed the proximate cause of the injury. Accordingly the court affirmed the judgment of the trial court in favor of the plaintiff.—*Jefferson Hospital, Inc. v. Van Lear, 41 S. E. (2d) 441 (Va., 1947).*

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Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

14:153-188 (May) 1947

The Obese Patient: Statistical Study and Analysis of Symptoms, Diagnosis and Metabolic Abnormalities; Sex Differences—Treatment. H. M. Ray.—p. 153.
Report of Case of Spontaneous Cholecystoduodenostomy. G. J. Culver and J. R. Kline.—p. 162.
*Diabetes Mellitus Complicated by Addison's Disease: Case Report, with a Review of the Literature. J. S. Devitt and F. C. Murphy.—p. 164.
New Hemostatic Agents in Proctology. A. J. Cantor.—p. 166.
*Azotemia in Gastrointestinal Hemorrhage. A. Schrumpf.—p. 169.
Creed for the Treatment of Diabetes. G. E. Anderson.—p. 170.

Diabetes Mellitus Complicated by Addison's Disease.—The physiologic antagonism between the secretions of the adrenal cortex and the islands of Langerhans, according to Devitt and Murphy is well known. It is emphasized by the almost universal hypersensitiveness to insulin observed in diabetic persons with Addison's disease. It is paradoxical that diabetes should develop at all in the presence of adrenal cortex insufficiency. A survey of literature confirms that diabetes is the antecedent disease in all except 3 instances of both endocrine disturbances in the same patients. The normal antagonism between the adrenal cortex and the islands of Langerhans was well demonstrated in a woman aged 28 by the occurrence of reciprocal exacerbations of one disease associated with remissions of the other. The authors emphasize that sensitivity to insulin is less pronounced when desoxycorticosterone acetate is employed in the treatment of Addison's disease, and under the same circumstances the diabetes may be more severe.

Azotemia in Gastrointestinal Hemorrhage.—Schrumpf concludes that azotemia after massive hemorrhage in the upper gastrointestinal tract is not caused by one single factor. The chief factor is of dietetic origin, as the diet used is insufficient in protein and energy requirements. This again increases protein catabolism and waste of tissue. A second factor is the absorption of blood, which to a certain but moderate degree can play a part in the development of the initial azotemia. All other factors seem to be of little or no importance.

American Journal of Hygiene, Baltimore

45:259-404 (May) 1947

Control of Schistosomiasis Japonica. D. B. McMullen.—p. 259.
Studies on Filariasis: V. Serologic Relationships Between Antigenic Extracts of Four Nematodes. V. G. Warren.—p. 299.
*Immunity to Yellow Fever Five Years After Vaccination. C. R. Anderson and Augusta Gast-Galvis.—p. 302.
Typhus Fever in Italy, 1943-1945, and Control with Louse Powder. F. L. Soper, W. A. Davis, F. S. Markham and L. A. Riehl.—p. 305.
Typhus Fever in California, 1916-1945, Inclusive: Epidemiologic and Field Laboratory Study. M. Dorthy Beck and A. Van Allen.—p. 335.
Typhoid Vaccine Studies: XI. Effect and Effectiveness of Three 0.5 cc. Doses of TAB Vaccine. G. F. Luippold, D. Longfellow and M. Toporek.—p. 355.
Infestation of Man in Burma with Trombiculid Mites, with Special Reference to Trombicula Deliensis. H. S. Fuller.—p. 363.
Role of Antibody in Experimental Poliomyelitis. Isabel M. Morgan. —p. 372.

Immunity to Yellow Fever Five Years After Vaccination.—Anderson and Gast-Galvis report the results of studies recently made with 17 D yellow fever virus in a selected group of vaccinated persons in four Colombian towns. Their aim was to determine what changes had occurred in the immune status since vaccination and whether revaccination appeared advisable. Serums were obtained approximately five years after vaccination and revealed a high proportion of persons with neutralizing antibodies in all age groups. The percentage is comparable with that reported in studies of serums drawn a few months after vaccination. It is concluded, therefore, that neither children nor adults require revaccination five years after vaccination.

American Journal of Medical Sciences, Philadelphia

213:641-768 (June) 1947

Postexertional Orthostatic Hypotension. L. W. Eichna, S. M. Horvath and W. B. Bean.—p. 641.
Tyrosinase Inhibiting Action of Serum from Normal and Cancerous Patients. W. C. Stadie, M. Perlmutter and D. Robinson.—p. 655.
*Treatment of Syphilis of Central Nervous System with Penicillin. A. Heyman.—p. 661.
Oral Administration of Penicillin in Dogs. R. B. Stebbins, T. J. Maeck and P. J. Daughenbaugh.—p. 671.
*Streptomycin in Treatment of Certain Gram-Negative Bacillus Infections of Central Nervous System. T. F. Paine, R. Murray, H. W. Harris and M. Finland, with technical assistance of Clare Wilcox.—p. 676.
Significance of Myeloid Maturation Curve in Material Aspirated from Sternal Bone Marrow. S. P. Lucia and Marjorie L. Hunt.—p. 686.
*Treatment of Pernicious Anemia with Synthetic L. Casei Factor. N. B. Kurnick, with technical assistance of Gertrude Lurinsky.—p. 694.
Renal Filtration Rates in Pregnancy Toxemia: Inulin and Exogenous Creatinine. L. D. Odell.—p. 709.
Plasma Angiotonase Concentration in Normal and Toxemic Pregnancies. E. W. Page.—p. 715.
Diagnosis of Generalized Amyloidosis by Congo Red Test: Definitive Diagnostic Criteria. I. J. Selikoff.—p. 719.
Sickle Cell Anemia: Recent Progress of Pediatric Interest. B. Dickstein and I. J. Wolman.—p. 728.
The Vagina. F. B. Block.—p. 737.

Penicillin in Syphilis of Central Nervous System.—Heyman utilized a dosage ranging from 1.2 to 6 million units of penicillin in the treatment of 141 patients, 83 men and 58 women, with syphilis of the central nervous system. The patients were followed for six to nineteen months. It is believed that dosages less than 4,000,000 units will prove to be unsatisfactory. The total dosage of 4,000,000 units may be used in doses of 50,000 units every three hours for eighty injections in ten days. Preliminary observations indicate that this dosage will probably produce an arrest of the neurosyphilitic process in 85 per cent of the cases. Pronounced subjective improvement was frequently noted. Patients with early neurosyphilis obtained a better response to penicillin than late cases. No correlation was observed between the changes in the blood serologic tests and the response of spinal fluid following penicillin. The cell count of the spinal fluid was found to be a sensitive index of treatment failure. Thirteen of the 141 patients were found to have evidence of spinal fluid relapse following treatment. Approximately half of the patients who obtained normal or satisfactory spinal fluid findings had had adequate chemotherapy previously, indicating that penicillin has a far greater effect than routine chemotherapy on syphilis of the central nervous system. Penicillin is recommended for the treatment of early neurosyphilis and late asymptomatic neurosyphilis provided adequate facilities are available for follow-up examinations of the spinal fluid. In late symptomatic neurosyphilis penicillin does not replace fever therapy as the treatment of choice.

Streptomycin in Gram-Negative Bacillus Infections of Central Nervous System.—Paine and his co-workers treated 1 boy aged 14 and a 16 day old infant with meningitis due to Pseudomonas aeruginosa, 1 infant aged 4 months with meningitis due to Bacillus proteus morgani, and 2 infants aged 8 and 11 months respectively with meningitis due to Hemophilus influenzae type b by administering streptomycin. The 14 year old boy received a total of 28 Gm. of the drug intramuscularly and 0.45 Gm. intrathecally. The 4 infants received from 4.4 to 11.6 Gm. by the intramuscular route and from 0.225 to 0.75 Gm. by the intrathecal or the intraventricular route. The transient untoward effects of local use of streptomycin in 3 of the patients would indicate that the intraventricular and intrathecal routes should be used with caution. A prompt clinical and bacteriologic response occurred in 2 patients in whom penicillin and sulfonamide drugs proved ineffective, and in 1 patient in whom no other medications were used. A gradual response to streptomycin occurred in 1 patient in whom penicillin therapy was ineffective. In 1 of the patients with meningitis due to Hemophilus influenzae the institution of streptomycin may have affected a resolution of the disease process. Recovery

occurred in all 5 cases. Streptomycin would seem to be the drug of choice in the treatment of meningitis due to these gram-negative bacilli.

Synthetic Lactobacillus Casei Factor in Pernicious Anemia.—Seven patients with pernicious anemia—4 women between the ages of 59 and 76 and 3 men between 64 and 70—were treated by Kurnick with synthetic Lactobacillus casei factor in doses of from 2.5 to 30 mg. daily by mouth. All patients gave a complete hematologic response, including reticulocyte count, red cell count, white cell count and platelet count, and correction of the megaloblastic dysplasia of the bone marrow. Reticulocytosis began between the fourth and seventh days and reached a peak two to four days later. Subjective improvement, most strikingly evidenced by greatly improved appetite, occurred usually on the third or fourth day of treatment. Glossitis and other gastrointestinal symptoms subsided within one week, and regeneration of papillae became apparent at this time. The minimal oral therapeutic dose for maximal response is 2.5 mg. or less daily. Combined sclerosis of the spinal cord is somewhat improved by folic acid therapy. The results are similar to those with liver. It is suggested that the Lactobacillus casei factor is either the anti-pernicious anemia factor or is utilized in its synthesis. Other compounds in liver with similar structures but without activity for L. casei may also be utilized by the human organism.

American Journal of Surgery, New York

73:635-734 (June) 1947

Experiences of an Army Doctor in European Theater of War. E. C. Cutler.—p. 637.
Streptomycin. E. J. Pulaski.—p. 651.
Crossed Ectopia with Fusion: Review of Literature and Report of 4 Cases. B. S. Abeshouse.—p. 658.
*Improved Grafting Technic for Burns of Extremity. W. B. Macomber and H. S. Patton.—p. 684.
Mercury—Its Role in Intestinal Decompression Tubes. M. O. Cantor. —p. 690.
Early Diagnosis in Radical Resection of Carcinoma of Lower Esophagus. I. D. Puppel.—p. 695.
*Graft Fixation Beneath Tubed Pedicle Flaps. G. B. Sanders and R. B. Lynn.—p. 700.

Improved Grafting Technic for Burns of Extremity.—Macomber and Patton present a grafting procedure which is especially advantageous in large single plaque burns of the extremities. It affords as advantages an ideal recipient site, the absence of infected, scar forming granulations beneath the grafts, minimal postoperative dressings, a shorter healing period and a softer, more pliable and durable graft.

Graft Fixation Beneath Tubed Pedicle Graft.—Sanders and Lynn call attention to the difficulties of applying adequate pressure dressings to split skin grafts on the donor areas beneath tubed pedicle flaps. They describe a satisfactory and efficient pressure dressing of the stent type which has resulted in complete takes of grafts beneath tubed pedicle flaps in 8 consecutive cases. This type of dressing has three advantages: 1. It provides firm fixation, immobilization and sufficient pressure on the graft. 2. It ensures protection and immobilization of the tube. 3. Cutting of the superficial gauze dressing makes the tube easily accessible for frequent inspection without disturbing the stent dressing on the graft. The stent dressing is left undisturbed for six or seven days, at the end of which time the sutures holding the stent in place are cut and likewise the sutures in the graft itself are cut and removed. It is important to leave the end-on mattress sutures in place for an additional four or five days. If this is not done, the area of the donor site will reexpand, pulling away from the edges of the graft, leaving a circumferential raw area between the graft and the skin edge.

American Practitioner, Philadelphia

1:517-574 (June) 1947

Trends in Immunization of Children. E. H. Watsen.—p. 517.
Diagnosis and Treatment of Tachycardias. E. A. Brethauer Jr.—p. 522.
Headache: Common Etiologic Types and Methods of Therapy. L. S. Blumenthal.—p. 527.
Review of Rh Factor and Its Clinical Significance. J. L. Switzer. —p. 532.
New Knowledge in Treatment of Malaria. H. Packer.—p. 535.
Functional Derangement of Digestion. W. T. Gibb Jr.—p. 542.
Challenge of Alcoholism. F. G. Ebaugh and K. D. Heuser.—p. 549.

Anesthesiology, New York

8:227-338 (May) 1947. **Partial Index**

Gaseous Anesthetics. W. Bourne.—p. 227.
Microdetermination of Blood Levels of Procaine Hydrochloride After Intravenous Injection. D. J. Graubard, R. W. Robertazzi and M. C. Peterson.—p. 236.
Use of New Curarizing Agent, Dihydro-Beta-Erythroidine, for Production of Muscular Relaxation During Anesthesia and Surgery. R. D. Dripps and W. F. Sergent.—p. 241.
Curare and Curare-like Compounds: Review. B. H. Robbins and J. S. Lundy.—p. 252.
Attempt to Prolong Sympathetic Block with Bromsalizol in Polyethylene Glycol. M. H. Harmel, L. D. Vandam and A. Lamont.—p. 266.
Intraspinal Segmental Anesthesia: A Preliminary Report. M. Saklad, C. S. Dwyer, S. Kronenberg, E. Neves and M. Sorkin.—p. 270.

Archives of Neurology and Psychiatry, Chicago

57:521-660 (May) 1947

*Relation Between Electroencephalographic and Histologic Changes Following the Application of Graded Force to the Cortex. F. T. Zimmerman and T. J. Putnam.—p. 521.
Malignant Chordoma of the Lumbar Region: Report of Case with Autopsy; Comment on Unusual Metastases to Brain, Lungs, Pancreas, Sacrum and Axillary and Iliac Lymph Nodes. A. A. Morris and R. Rabinovitch.—p. 547.
*Histopathologic Changes Associated with Human Poliomyelitis. M. Scheinker.—p. 565.
Physiology of Botulinus Toxin. A. C. Guyton and M. A. MacDonald. —p. 578.
*Meningeal Gliomatosis: Study of 42 Cases. F. E. Pulmeteer and J. W. Kernohan.—p. 593.
Educability of a "Deteriorated" Epileptic Patient. Doris Twitchell-Allen. —p. 617.

Electroencephalographic and Histologic Changes Following Application of Graded Force.—Zimmerman and Putnam introduce a new method for the study of cortical cell change in connection with electroencephalographic deviations. The experiments were made on cats, and traumatizing activity was recorded in terms of voltage (intensity of force), and the duration of the force applied. The experiments were designed to investigate the possible relationship between the electroencephalographic patterns and the histopathologic changes occurring simultaneously after the application of graded force to the cortex. It was found that electroencephalographic changes vary with the amount of cortical cell damage within a certain critical range. Below this critical range cortical cell change occurs without corresponding electroencephalographic deviations. Within the critical range the amount of electrical and cortical cell change is directly proportional to the amount of force applied to the cortex. Localized cortical cell damage produces localized electroencephalographic changes. Histologic changes assume a definite pattern of stratification, according to the amount of force applied to the cortex. Electroencephalographic changes vary with the amount of force applied to the cortex. Reduction in amplitude is directly proportional to the amount of force delivered. The appearance of slow waves is inversely proportional to the amount of force applied to the cortex. Unilateral convulsive electrical patterns were produced by the mechanical application of force to the cortex.

Histopathologic Changes in Poliomyelitis.—Scheinker thinks that these histopathologic aspects of human poliomyelitis remain controversial: (1) the localization of the disease and its distribution; (2) the primary type of the essential lesions; (3) the correlation of the neuronal damage and the mesodermalgia alterations, and (4) the role played by the microglia. He reviews some of the conflicting views and presents detailed studies on 6 cases of acute anterior poliomyelitis. Whereas until recently acute anterior poliomyelitis was regarded by clinicians and pathologists as a disease of the anterior horns of the spinal cord, the present study demonstrates that no part of the central nervous system entirely escapes damage. The medulla, pons, midbrain, hypothalamus and cerebellum were involved to a great extent in every case. There was no direct correlation between the degenerative neuronal changes and the inflammatory reaction, so that they may be independent phenomena. Both diffuse and focal proliferations of microglia cells were noted as predominant tissue reactions in all cases. The pronounced concentration of the inflammatory and degenerative tissue reactions in the region of the vagal nuclei provides additional suggestive evidence of the possible spread of the virus from the intestine into the central nervous system by way of the afferent and efferent pathways of the vagus nerve.

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Meningeal Gliomatosis.—Polmeteer and Kernohan say that in a survey of the glioma group of neoplasms observed at the Mayo Clinic from 1922 to 1942 generalized meningeal gliomatosis was found in 42 instances. The medulloblastoma was responsible for generalized metastases in 47.6 per cent of the cases. Glioblastoma multiforme represented 14.3 per cent of the series, ependymoma and ependymoblastoma 11.9 per cent, oligodendroglioma and oligodendroblastoma 11.9 per cent, astrocytoma 7.1 per cent, retinoblastoma 4.8 per cent and pinealoma 2.4 per cent. Although several instances of extracranial metastasis from gliomas have been reported, in this series the metastatic implants were limited to the central nervous system. The metastatic growths were more or less confined to the subarachnoid space. The pia mater and the subarachnoid space, which are extremely vascular, furnish a suitable environment for the nutrition and the survival of the cells of the tumor. The extension of the cells is limited peripherally by the fibrous, inelastic and avascular dura mater and arachnoid membrane and centrally by the compact structures of the brain and spinal cord. In the majority of cases the cells of the metastatic tissue were easier to identify than those of the primary tumors, probably because they grew on a free surface and the morphologic characteristics of these cells were unaltered by the pressure of the adjacent cerebral and spinal structures. Contrary to the general belief that only the more malignant varieties of glioma produce generalized meningeal gliomatosis, the authors found that this process may result from almost any variety of glioma.

California Medicine, San Francisco

66:331-420 (June) 1947

Roentgenology in Chronic Mastoiditis. H. A. Fletcher and F. Windholz. —p. 331.
*Subacute Generalized Neuromuscular Exhaustion Syndrome—Report of 3 Cases. J. M. Nielsen.—p. 338.
Present Status of Surgery in Congenital Heart Disease. J. C. Jones. —p. 341.
*Evaluation of Topical Penicillin Therapy: Review of Recent Literature. T. H. Sternberg and P. LeVan.—p. 344.
Treatment of Interstitial Cystitis. R. W. Barnes.—p. 347.
Cutaneous Reactions to Penicillin. B. A. Newman.—p. 349.
Estrogen Treatment of Chronic Urethritis in the Female. F. S. Howard. —p. 352.
Present Day Treatment of Asthma. M. C. Harris.—p. 354.
Fracture of Olecranon Process Due to Muscle Pull with Forearm in Hyperextension. A. Waxman and H. Geshelin.—p. 358.
*Neurologic Complications to Treatment with Rabies Vaccine. F. H. Redewill Jr. and L. J. Underwood.—p. 360.
Cancer Problem. D. A. Wood and M. B. Shimkin.—p. 364.

Subacute Generalized Neuromuscular Exhaustion.—The syndrome presented by Nielsen develops subacutely after severe overexertion which itself occurs during a period of euphoria. The patient suddenly becomes aware of utter exhaustion approaching paralysis of the entire body but most intensely in muscles which have been abused. There are severe pain and tenderness in all muscles, also a simultaneous restlessness which makes it difficult for the patient to rest or to relax. Fascicular twitching appears in the muscles and rapid atrophy ensues. During the acute stage the muscles are flaccid and deep reflexes absent; later the reflexes are normal. After a recovery period of several months the patient is able to be up and do moderate work, but he never recovers his former endurance. The author is probably the first to describe this syndrome. He reported 1 case in 1940 and 2 others in 1944. March described a typical case in 1943. The author describes 2 cases observed since the last report and 1 other case not correctly recognized eighteen years ago. The first patient presented here was a youth aged 16 who had done exercises demanding extreme exertion for three months, less for another four months. This was followed by sudden appearance of muscular tenderness, "jerking" of muscles, atrophy of upper limbs and of legs; extreme weakness approaching paralysis. The second patient was an arteriosclerotic man aged 61 who had hauled and lifted 539 cans of milk weighing 128 pounds each in three days. This exertion was followed by complete exhaustion, with loss of 27 pounds in six weeks in spite of rest. The third patient was dean of a university who worked fifteen to eighteen hours daily for ten years. He reached so low a level of endurance that walking two city blocks was sufficient to put him to bed for three weeks.

Topical Penicillin Therapy.—Sternberg and LeVan maintain that penicillin ointment is of value in a limited number of dermatoses ordinarily caused by penicillin-sensitive bacteria, such as impetigo, the ecthyma-pyoderma group, sycosis vulgaris and the infectious dermatitides. Inconsistencies in response to treatment occur, probably because of penicillin-resistant strains of streptococci and staphylococci and improper local use of the drug. The overall results of topical penicillin therapy of the bacterial infections of the skin are good, but comparable results have been obtained with other chemotherapeutic agents, although more time may be required. An appreciable number of persons are initially sensitive to penicillin. Studies have shown that a large but as yet undetermined percentage of people become sensitized to penicillin following local contact with the drug. Because of the increasing incidence of reactions concomitant with the present widespread use of penicillin, it seems likely that its topical use will eventually be limited to bacterial infections of the skin unresponsive to other therapeutic agents.

Neurologic Complications of Treatment with Rabies Vaccine.—Redewill and Underwood studied the files of the Los Angeles County Hospital for cases of rabies treatment reaction admitted over the last five years. The 5 cases reviewed presented mainly a neurologic clinical pattern and were true examples of complications due entirely to treatment with rabies vaccine. Recovery occurred in all 5 cases. One of the conditions most commonly confused with the neurologic reaction to rabies vaccine was anterior poliomyelitis. The onset a short time after initiating Pasteur treatment forms the main differential feature favoring the diagnosis given in these cases. Rabies itself, sometimes feared to be present at the onset, is ruled out principally by the clinical course; also the incubation period in cases complicating rabies vaccine treatment is usually between ten and seventeen days, that of rabies three to eight weeks. Complications may develop in persons never bitten by a rabid animal or exposed to rabies but who have merely been given Pasteur treatment. Many believe the reactions to be the result of anaphylactic or allergic action. The greatest number of accidents occurs with large doses of fresh virus, the lowest with the carbolized virus vaccines. It is possible that the fixed virus is the etiologic agent. The clinical entities included encephalitis alone and encephalitis with spinal involvement as well as pure spinal cord manifestations. Treatment was chiefly symptomatic. The incidence of complications does not warrant the withholding of the Pasteur treatment when indicated. The treatment is best suspended with the occurrence of neurologic symptoms.

Journal of Bacteriology, Baltimore

53:509-672 (May) 1947. **Partial Index**

A Study with High Voltage Electron Microscope of the Endospore and Life Cycle of Bacillus Mycoides. G. Knaysi, R. F. Baker and J. Hillier.—p. 525.
Inhibition of Methionine Synthesis in Escherichia Coli by 2-Chloro-4-Aminobenzoic Acid and Sulfanilamide. F. B. Strandskov.—p. 555.
Inactivation of the V Factor by Erythrocytes and the V-Sparing Property of Nicotinamide. E. P. Casman.—p. 561.
*Penicillin Production by a Thermophilic Fungus. L. J. Rode, J. W. Foster and V. T. Schuhardt.—p. 565.
Studies on Streptomycin: I. Factors Influencing the Activity of Streptomycin. S. Berkman, R. J. Henry and R. D. Housewright.—p. 567.
Effect of Streptococcus Pyogenes Extracts and Filtrates on Various Bacteria. L. G. Nutini, T. A. Kelly and Margaret Ann McDowell. —p. 575.
Relation of Protein Binding to Pharmacology and Antibacterial Activity of Penicillins X, G, Dihydro F and K. R. Tompsett, Selma Schultz and W. McDermott.—p. 581.
Study of Sensitivity to Hemophilus Pertussis in Laboratory Animals. I. A. Parfentjev, M. A. Goodline and M. E. Virion.—p. 597.
Spore Wall Demonstrated with the Electron Microscope. C. A. Evans and N. R. Underdahl.—p. 647.
Isolation and Distribution in Florida of an Anaerogenic Paracolon, Type 29911. Mildred M. Galton, Mary E. Hess and Patricia Collins. —p. 649.
Isolation of a Strain of Escherichia Coli Pathogenic for the Rabbit's Eye from a Patient with Diarrhea. I. Ruchman and K. Dodd.—p. 653.
Cytochemical Mechanisms of Penicillin Action: I. Oxidation Reduction Levels. J. Dufrenoy and R. Platt.—p. 657.

Penicillin Production by a Thermophilic Fungus.—Rode and his associates say that a program for obtaining antibiotics from thermophilic organisms active against Brucella abortus is under way at the Brucellosis Research Laboratory at the University of Texas. Several fungi, actinomycetes and

bacteria, all growing well at 52 C. and forming substances inhibitory to Brucella as well as to many other common test bacteria, have been isolated in pure culture from composted manure. One of the fungus cultures is unique in that it produces penicillin at 52 C. and is a new species member of the group of penicillin-producing fungi. Heretofore the highest temperature for penicillin formation has been 37 C. The organism has been identified tentatively as Malbranchea pulchella. Of several mediums tests, corn steep liquor medium has given the highest antibacterial activity.

Journal of Experimental Medicine, New York

85:559-800 (June) 1947

Influence of Anesthesia on Experimental Neurotropic Virus Infections: In Vitro Studies with Viruses of Western and Eastern Equine Encephalomyelitis, St. Louis Encephalitis, Poliomyelitis (Lansing) and Rabies. S. E. Sulkin and Christine Zarafonetis.—p. 559.

Histologic and Serologic Sequences in Experimental Hypersensitivity. C. van Z. Hawn and C. A. Janeway.—p. 571.

Study of Inhibition of Streptococcal Proteinase by Serums of Normal and Immune Animals and of Patients Infected with Group A Hemolytic Streptococci. E. W. Todd.—p. 591.

Mode of Action of Streptomycin on Type b Hemophilus Influenzae: Nature of Resistant Variants. H. E. Alexander and G. Leidy.—p. 607.

Modifying Effects of Certain Substances of Bacterial Origin on the Course of Infection with Pneumonia Virus of Mice. F. L. Horsfall Jr. and M. McCarty.—p. 623.

Multiplication and Spread of the Virus of St. Louis Encephalitis in Mice, with Special Reference to Its Fate in the Alimentary Tract. J. L. Peck Jr. and A. B. Sabin.—p. 647.

Relation to Course of Avian Malaria of Biotin and a Fat Soluble Material Having the Biologic Activities of Biotin. W. Trager.—p. 663.

Immunochemical Studies on Blood Groups: Preparation of Blood Group A Substances from Human Sources and a Comparison of Chemical and Immunochemical Properties with Those of Blood Group A Substance from Hog Stomach. E. A. Kabat, A. Bendich, Ada E. Bezer and S. M. Beiser.—p. 685.

Factors Involved in Production of Clostridium Welchi Alpha Toxin. M. H. Adams, Edelmira D. Hendee and A. M. Pappenheimer Jr. —p. 701.

Relation of Iron Salts to Inhibition of Glycolysis by Theiler FA Virus of Mouse Encephalomyelitis. E. Racker and I. Krimsky.—p. 715.

Mechanism of Acrial Disinfection by Glycols and Other Chemical Agents. T. T. Puck.—p. 729.

Transmission of Virus of Lymphocytic Choriomeningitis by Trichinella Spiralis. J. T. Syverton, O. R. McCoy and J. Koomen Jr.—p. 759.

Chemical Studies on Host-Virus Interactions: Tryptophan Requirements in the Stages of Virus Multiplication in the Escherichia Coli-T2 Bacteriophage System. S. S. Cohen and Catherine B. Fowler.—p. 771.

Journal of Immunology, Baltimore

56:97-194 (June) 1947

Neutralization of Western Equine Encephalomyelitis Virus by Human Convalescent Serum: Influence of Heat Labile Substances in Serum on Neutralization Index. L. Whitman.—p. 97.

Studies on Immunization of Swine Against Infection with the Swine Influenza Virus: I. Resistance Following Subcutaneous Administration of Formolized Purified Influenza Virus. I. W. McLean Jr., Dorothy Beard and J. W. Beard.—p. 109.

Mechanism Responsible for Lowered Resistance of Hypophysectomized Rats to T. Lewisi. N. Molomut.—p. 139.

Factors Influencing Production of Tetanal Toxin. J. H. Mueller and Pauline A. Miller.—p. 143.

*Purification and Concentration of Influenza Virus by Means of Alcohol Precipitation. H. R. Cox, J. van der Scheer, S. Aiston and E. Bohnel. —p. 149.

Factors Influencing Red Cell Agglutination-Inhibitive Reaction in Influenza and Application to Diagnostic Test. L. Whitman.—p. 167.

Effect of Temperature and Serum on Detoxification of Staphylococcal Toxin by Interfacial Adsorption. J. M. Johlin.—p. 179.

Biophysical Studies of Blood Plasma Proteins: VI. Immunologic Properties of γ1-Globulin from Plasma of Normal Humans. H. F. Deutsch, R. A. Alberty, L. J. Gosting and J. W. Williams.—p. 183.

Alcohol Precipitation in Purification and Concentration of Influenza Virus.—Cox and his associates think that the widespread use of the chick embryo for the cultivation of viruses and the increased use of antigenic materials from this source for human vaccination make it desirable that influenza virus obtained from chick embryos be highly refined in order to eliminate or reduce the possibilities of sensitizing human beings to chick embryo proteins. The authors report experiments in which ethyl and methyl alcohol were used to concentrate and partially purify the PR-8 Weiss and Lee strains of influenza virus under carefully controlled conditions of alcohol concentration, temperature and p_H. Of the two, methanol was found to be superior, since the optimal concentration is of broader range, and less denaturation of viral protein is encountered than with ethanol. The data indicate that methanol precipitation under controlled conditions produces no virus denaturation nor loss of activity as judged by chicken cell agglutinating activity, infectivity titers in chick embryos or immunizing potency of killed vaccines for mice. On the contrary, based on the chicken cell agglutinating activity of the starting material, yields of virus equal to or exceeding 100 per cent are obtained. The methanol precipitation method is readily applicable to the concentration and purification of influenza virus using either the bucket, angle head or Sharples continuous flow types of centrifuges. The method is particularly valuable for producing vaccines on a large scale. The method may have application in the concentration and purification of other viral and rickettsial agents.

Journal-Lancet, Minneapolis

67:223-262 (June) 1947

Communitywide Chest X-Ray Surveys and the General Practitioner. H. E. Hilleboe.—p. 225.

Modern Methods of Diagnosis in Pulmonary Tuberculosis. S. S. Cohen. —p. 229.

Guide for Disposition of Persons with Abnormal Pulmonary Findings on X-Ray Films. H. E. Hilleboe and J. Holm.—p. 234.

Importance of the Isolation and Identification of Tubercle Bacilli. W. H. Feldman and A. G. Karlson.—p. 239.

Early Diagnosis of Carcinoma of Lung. L. G. Rigler.—p. 243.

Bronchoscopy and the Chest Survey. K. A. Phelps.—p. 246.

Value of Chest X-Ray Survey in the Diagnosis of Cardiovascular Disease. G. N. Aagaard.—p. 248.

Tuberculosis in Pediatric Practice. L. F. Hill.—p. 249.

Fifteen Years of Tuberculosis Control at the University of Pennsylvania. H. D. Lees.—p. 255.

Journal of Neurophysiology, Springfield, Ill.

10:167-246 (May) 1947

Further Localization and Analysis of Adrenergic Synaptic Inhibition. A. S. Marrazzi and Rose N. Marrazzi.—p. 167.

Effect of Parasympathetic Drugs on the Conditioned Response. W. H. Funderburk and T. J. Case.—p. 179.

Acetylcholine and Neuromuscular Transmission. Marianne Fillenz and Mary Hanafin.—p. 189.

Acetylcholine and Synaptic Transmission in Spinal Cord. J. C. Eccles. —p. 197.

Differential Spinal Block: The Block of Cutaneous and Stretch Reflexes in Presence of Unimpaired Position Sense. S. J. Sarnoff and Julia G. Arrowood.—p. 205.

Viscosity Changes in Axoplasm Under Stimulation. J. V. Flaig.—p. 211.

Electrical Activity in Frog Spinal Cord. J. Cate, W. G. Walter and L. J. Koopman.—p. 223.

Inhibition of Cholinesterase by Di-Isopropyl Fluorophosphate. Physostigmine and Hexaethyl Tetraphosphate in the Roach. L. E. Chadwick and D. L. Hill.—p. 235.

Journal of Nutrition, Philadelphia

33:601-724 (June) 1947

Metabolism of Women During the Reproductive Cycle. Bertha Munks, Mildred Kaucher, Elsie Z. Moyer, Mary Ellen Harris and Icie G. Macy.—p. 601.

Blood Levels and Absorption of Vitamin A in Children with Keratosis Follicularis. R. F. Krause and H. B. Pierce.—p. 633.

*Effect of Fat Level of Diet on General Nutrition: III. Weight Loss, Mortality and Recovery in Young Adult Rats Maintained on Restricted Calories. B. T. Scheer, J. F. Codie and H. J. Deuel Jr.—p. 641.

Nutritional Surveys in Western Holland: Rotterdam, 1945. C. E. French and F. J. Stare.—p. 649.

Influence of Autoclaving Soybean Oil Meal on Digestibility of Proteins. R. J. Evans, J. McGinnis and J. L. St. John.—p. 661.

Nutritive Value of Keratin: III. Effect of Source, Particle Size and Method of Grinding. G. W. Newell and C. A. Elvehjem.—p. 673.

Study of Relation Between Protein Efficiency and Gain in Weight on Diets of Constant Protein Content. D. M. Hegsted and Jane Worcester.—p. 685.

Reproduction and Lactation in Highly Inbred Strains of Mice on Synthetic Diets. P. F. Fenton and G. R. Cowgill.—p. 703.

Effect of Fat Level of Diet on General Nutrition.—Scheer and his associates found that, when young adult rats are subjected to severe caloric restriction on diets varying in fat content, weight loss is less rapid and mortality is less on diets containing liberal amounts of fat than on a fat free diet. During recovery from the period of caloric restriction, weight loss is more rapidly regained, and reproductive capacity is superior on diets containing fat. This is one of a series of studies on the importance of fat in the diet. In every instance animals performed more satisfactorily when fed diets containing liberal amounts of fat than when fed diets containing little or no fat. The observation of Forbes and his associates that the metabolic efficiency of food utilization is greater when fat is present sup-

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gests one important possible explanation. It does not seem that all the effects which have been observed on physical capacity, resistance to undernutrition, reproduction and lactation can be the result simply of increased efficiency of food utilization. It appears that fat must take an active part in a variety of fundamental vital processes.

Journal of Urology, Baltimore

57:949-1232 (June) 1947. **Partial Index**

Studies in Urolithiasis: I. Composition of Urinary Calculi. E. L. Prien. —p. 949.
Experimental Production of Kidney Stones with Urea Splitting Organisms. H. I. Suby and Robina M. Suby.—p. 995.
Massive Calcinosis with Chronic Renal Insufficiency Due to Polycystic Kidneys: Case Report. T. M. Burkholder and R. R. Braund. —p. 1001.
Experiences with Tantalum Tubes in Reimplantation of Ureters into Sigmoid in Dogs and Humans. S. Lubash.—p. 1010.
Epithelium of Vaginal Type in Female Trigone: Clinical Problem of Trigonitis. L. Cifuentes.—p. 1028.
Irradiation Reactions in Bladder: Occurrence and Clinical Course Following Use of X-Ray and Radium in Treatment of Female Pelvic Disease. E. M. Watson, C. C. Herger and H. R. Sauer.—p. 1038.
Information Derived from X-Ray Examination of Neck of Bladder and of Prostatic Urethra. A. Pereira.—p. 1054.
*Stress Incontinence. E. Hock.—p. 1069.
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*Spinal Cord Injuries: Calculi of Urinary Tract. G. C. Prather. —p. 1097.
Revised Perineal Prostatectomy: Extraurethral and Extravesical Procedure. A. E. Goldstein.—p. 1145.
Follow Through on 100 Cases of Cancer of Prostate. J. A. Seaman, A. J. Connelly and N. Egnatz.—p. 1158.
Repair of Rectourethral Fistulas. L. G. Lewis.—p. 1173.
Repair of Inguinal Hernia Based on an Etiologic Relationship to Undescended Testicle. J. R. Dillon.—p. 1194.
Tumors of the Testis: Report of 922 Cases. N. B. Friedman and R. A. Moore.—p. 1199.
Effect of Presacral Neurectomy on Fertility of Man and Animals. R. E. Van Duzen, D. Slaughter and B. White.—p. 1206.

Stress Incontinence.—According to Hock the causes and mechanism of stress incontinence in women are still poorly understood. Urinary continence is achieved by the sum total of all factors increasing the urethral resistance. Urinary incontinence develops if the sum total of these factors is decreased so that the urethral resistance is insufficient to withstand a sudden increase of the intravesical pressure. Reflex relaxation of the urethra is often a major factor in the causation of incontinence. If the relaxation is due to mechanical injury of the sphincters or supportive structures of the urethra, one of the accepted incontinence operations is indicated. If a reflex from some pelvic organ is responsible, correction of the disease will cure the incontinence. A frequent cause seems to be chronic inflammation of the urethral glands. In most cases a combination of several factors is at work. Usually there is some mechanical relaxation of the urethra which in itself is insufficient to produce incontinence. If reflex urethral relaxation is added, the combination of the two may lead to incontinence, and then clinical cure will follow the elimination of only one factor. If in the individual case it is impossible to determine whether incontinence is due more to mechanical or to reflex relaxation of the urethra, it is advisable to begin with the less risky treatment of the urethritis, which consists in urethral dilations and fulguration, the latter being especially effective. Twenty cases of stress incontinence in women and 2 cases of a similar condition in men are presented.

Urinary Calculi in Spinal Cord Injuries.—Prather is convinced that calculus disease in combination with renal infection is the most serious threat to those who have sustained injury of the spinal cord. His observations on this problem were made on over 60 patients with injury of the spinal cord in an army general hospital in this country. Intravenous urography was employed as soon as possible after admission as a part of the routine study, and the urograms were repeated at intervals of six to eight weeks, or more often if a febrile episode arose. Over a period averaging fifteen months from time of injury the author found an incidence of 31.5 per cent of renal calculi in patients with complete transection of the spinal cord and an incidence of 20 per cent in those with partial transection. Bladder calculi also were common. Of the patients with complete transection 30 per cent either had bladder calculi at the time of admission or developed them during hospitalization. Only 14 per cent of those with partial transection were found to have bladder calculi. These findings may be explained by the longer period of bladder drainage which was commonly necessary in patients with complete transection of the spinal cord. Formation of bladder calculi occurred irrespective of suprapubic or urethral catheter drainage, irrespective of tidal (automatic) or a manually controlled irrigation, and during the use of solution M as the sole irrigating medium. In most instances the calculi were small and could be removed with the cystoscopic lithotrite and with the aid of the Ellik evacuator and resectoscope sheath. Analysis showed that the stones from the kidney and the bladder were principally calcium phosphate and calcium carbonate. In the absence of a generally effective prophylaxis of calculus formation, surgical treatment frequently is necessary.

Laryngoscope, St. Louis

57:305-366 (May) 1947

One Stage Resection of Total Cervical Esophagus, Larynx, Base of Tongue, Hypopharynx, Cervical Trachea and Bilateral Cervical Lymph Node Chains for Carcinoma Primary in the Cervical Esophagus: Reconstruction of Cervical Esophagus. A. Brunschwig and E. Camp. —p. 305.
Anomalies of Internal Carotid Artery and Its Branches: Embryologic and Comparative Anatomic Significance. Report of New Case of Persistent Stapedial Artery in Man. F. Altmann.—p. 313.
Surgery of Frontal Sinus. H. M. Goodyear.—p. 340.
Use of 2.5 Per Cent Sulfathiazole in Propylene Glycol for Respiratory Infections. B. N. Craver and F. F. Yonkman.—p. 354.
*Hearing Aid for the Relief of Tinnitus Aurium. M. Saltzman and M. S. Ersner.—p. 358.

Hearing Aid for Relief of Tinnitus Aurium.—Saltzman and Ersner state that the fenestration operation will restore hearing and afford relief from tinnitus in a large percentage of cases of otosclerosis. This surgical procedure makes a path for extraceptive sound to reach the inner ear and by doing so the patient's intrinsic tinnitus either is subdued or becomes tolerable. The benefits obtained from a hearing aid are analogous to those of the fenestration operation. By amplification, much outside sound is enabled to reach the cochlea, crowding out and masking the patient's head noises. It was in the routine fitting of hearing aids that the authors discovered the therapeutic advantages in regard to tinnitus. They found it most efficacious in otosclerosis for those patients who are not suitable for the fenestration operation or are unwilling to undergo it. In nerve deafness, if no extraordinary tolerance difficulties are present, a hearing aid will afford considerable relief from head noises simultaneously with improvement in hearing. A hearing aid is helpful also in the tinnitus associated with chronic adhesive otitis media.

New England Journal of Medicine, Boston

236:885-920 (June 12) 1947

Surgery of Cancer. C. Huggins.—p. 885.
*Observations on a Family Epidemic of Infectious Hepatitis. H. G. Kunkel and C. L. Hoagland.—p. 891.
*Massive Gastrointestinal Bleeding Following Exposure to Low Pressure. W. W. Schieg.—p. 898.
Pediatrics. Members of Staffs of the Children's and Infants' Hospitals —p. 901.
Periarthritis Nodosa Involving Gallbladder and Liver: Infarcts of Gallbladder.—p. 909.
Wilm's Tumor of Kidney.—p. 915.

236:921-964 (June 19) 1947

Medical Care in Our Free Society. L. S. McKittrick.—p. 921.
Thrombophlebitis—Problem of Treatment. H. L. Albright.—p. 928.
Effect of Restricted Intake of Carotene and Vitamin A on Psoriasis Vulgaris. Preliminary Report. R. Hoffmann, E. J. Lorenzen and Arlene S. Garfinkel.—p. 933.
Time of Election for Abdominal Surgery in Childhood. E. J. Donovan. —p. 937.
Allergic Manifestations After Injection Treatment of Varicose Veins. Eliza A. Melkon and Dorothy K. Scheidell.—p. 940.
Rubella (German Measles). C. Wesselhoeft.—p. 943.
Cavernous Hemangioma of Right Middle Lobe of Lung.—p. 951.
Leiomyoma of Esophagus.—p. 955.

Family Epidemic of Infectious Hepatitis.—An epidemic of infectious hepatitis occurring in 9 of 10 children in a single family was followed by Kunkel and Hoagland for five months in New York. The children ranged in age from 3 to 20. Contact was found to be the probable mode of spread. Determina-

tions of sulfobromophthalein retention and thymol reactivity of the serum proved to be valuable aids in the detection of non-icteric cases. The thymol turbidity test, because of its prolonged elevation, was of special value in an epidemiologic study. Spider angiomas, which developed during the acute attack, were found in 5 cases. This physical sign was characterized by sudden onset and delayed disappearance. It proved to be helpful in corroborating the diagnosis in 2 cases. Six children did not develop clinical evidence of jaundice. The severity of the illness and the presence of jaundice showed a definite relation to the age of the children, the disease being milder in the younger group.

Massive Gastrointestinal Bleeding Following Exposure to Low Pressure.—A medical officer aged 29 was admitted to a station hospital because of bloody diarrhea of two days' duration. Two days before admission the patient had been exposed to a simulated altitude of 41,000 feet while demonstrating some of the phenomena of high altitude physiology. During the reduction in pressure he had crampy abdominal pain with distention. This was mild at first but increased during the ten minutes at that pressure. The pressure was then increased to 2¾ pounds per square inch—equivalent to an altitude of 39,000 feet. This was maintained for half an hour. The abdominal pain was not disabling but was uncomfortable. It disappeared during the increase in pressure. He ate supper and went to bed early. About four hours after retiring he was awakened with crampy abdominal pains that were generalized and associated with a desire to evacuate. A large bloody diarrhea containing dark clots ensued. Three hours later similar rectal bleeding occurred. The next day the patient felt well and went about his daily duties. Three more tarry stools in the next twenty-four hours brought him to the hospital. On the fifth hospital day the stools became normal. Schier discusses the differential diagnosis and possible etiologic factors, namely shock, acute dilatation and air embolism of the bowel and increased capillary permeability associated with an allergic diathesis. Other possible sources of bleeding of an obscure nature are discussed, including Meckel's diverticulum and new growths of the small intestine. Treatment is symptomatic, with early transfusion. Surgery is indicated when the source of the bleeding is definite and the lesion is remediable by surgery or when severe recurrent hemorrhages of unknown nature leave surgery as the only resort.

New Orleans Medical and Surgical Journal

99:599-662 (June) 1947

Evaluation of Estrogen Therapy. R. A. Kimbrough and S. L. Israel. —p. 599.
Crush Syndrome in Obstetrics. M. Suter and F. Brumfield.—p. 605.
Reverse Trendelenburg Position and Early Mobilization After Operation. E. Mendelssohn.—p. 608.
*Homologous Serum Hepatitis: Clinical Implications. L. Schiff.—p. 611.
*Echinococcus Infection (Hydatid Disease) in Louisiana. J. C. Swartzwelder.—p. 617.
Part of General Practitioner in Management of Vesical Neck Obstruction. F. E. B. Foley.—p. 619.
Body Snatchers. J. Grindle.—p. 627.

Homologous Serum Hepatitis.—In commenting on homologous serum hepatitis, which occurred in 5 men between 48 and 63 and in 1 woman aged 31, Schiff emphasizes the importance of homologous serum jaundice in the differential diagnosis of jaundice, with particular respect to (1) metastatic neoplasm of the liver in patients who have had a recent resection of a malignant tumor, (2) stricture of the common duct (or sometimes stone) in patients who have had a recent operation on the biliary tract, usually a cholecystectomy, and (3) neoplasm as a cause of painless jaundice in middle aged or older persons. It is essential to keep homologous serum jaundice in mind whenever a patient with icterus is seen, regardless of the age of the patient, particularly if there is a history of an illness or an operation two to five months before the development of jaundice, even if the operation was performed on the biliary tract. Suspicions should be confirmed by recourse to the cephalin cholesterol flocculation and thymol turbidity tests.

Echinococcic Infection.—Swartzwelder reports 15 instances of echinococcic infection in 7 men and 8 women between the ages of 22 and 72 years. All 15 occurred in Louisiana. Ten of the 15 patients, 4 of whom were Negroes, were born in the United States. This suggests that human infection with this endemic disease may be acquired in this country. Whereas echinococcic infection has been found more often in native born residents of Louisiana than in immigrants, 95 per cent of the total number of patients with hydatid disease reported from the United States and Canada prior to 1940 in whom the nationality was known were immigrants. The value of employing intradermal and complement fixation tests with either sterile hydatid fluid or substitute tapeworm antigens in an effort to provide a diagnosis prior to operative procedure is emphasized.

Northwest Medicine, Seattle

46:331-412 (May) 1947

Modern Concepts of Neurosurgical Treatment of Herniated Nucleus Pulposus. D. E. Stafford.—p. 358.
Effects of Thrombin Injection into Hematoma Enveloping Fractures of Humerus in Rabbits. E. P. Lasher and G. B. O'Neil.—p. 361.
Safety Factors in Surgery of Colon. J. A. Duncan.—p. 366.
Sutures, Wound Healing and Early Ambulation. E. B. Speir.—p. 368.
Surgical Correction of Ptosis. G. N. Haffly.—p. 370.
Malignant Melanoma of Choroid. W. L. Clothier.—p. 371.
What Can Be Done for Conduction Deafness. W. F. Goff.—p. 372.
Tridione: Its Use in Treatment of Epilepsy and Other Neurologic Disorders. N. K. Rickles and C. G. Polan.—p. 375.

46:413-492 (June) 1947

What Is the Matter with Person Who Is Always Tired? W. C. Alvarez. —p. 437.
Simplified Intravenous Fluid Therapy. J. W. Nadal.—p. 444.
Value of Esophageal Lead in Electrocardiographic Diagnosis. M. Schwartz. —p. 448.
Need for Early Diagnosis of Bronchogenic Carcinoma: Report of 65 Cases. R. Berg Jr., J. K. Poppe and T. L. Havlicek.—p. 452.
Acute Pericarditis Simulating Myocardial Infarction. F. C. Massey. —p. 455.

Occupational Medicine, Chicago

3:335-434 (April) 1947

Health and Safety in Contract Shipyards During the War. P. Drinker. —p. 335.
*Acute Infections of Respiratory Tract and Their Control in Industry, with Special Reference to Immunization Against Influenza. Anna M. Baetjer.—p. 344.
Part Time Industrial Nursing Service as Developed by the Visiting Nurse Association of Detroit. Lucille Harmon.—p. 361.
Lessons Learned from the War. J. G. Townsend.—p. 366.
Fractures of Ankle. C. R. Murray.—p. 376.
*Tellurium: Accidental Exposure and Treatment with BAL in Oil. M. L. Amdur.—p. 386.
In Industry's Service. Victoria M. Trasko.—p. 392.
Vaccination of Industrial Workers Against Smallpox. L. C. McGee. —p. 406.
Cadmium Poisoning by Inhalation: Report of Case. F. F. Huck.—p. 411.

Respiratory Tract Infections.—Baetjer discusses the methods which industry may adopt in an effort to prevent the spread of diseases of the respiratory tract among workers. These diseases are the most important cause of absenteeism due to sickness. Since they originate from persons who have the disease-producing organisms in their nose and throat, the most important preventive measure is good personal hygiene to avoid the dissemination of such organisms into the air. Paper handkerchiefs may be supplied to employees to be used when sneezing, coughing and blowing the nose and then to be placed immediately in receptacles. To prevent droplet infection a distance of a few feet should be allowed between workers who face one another. Oiling of floors is of value in preventing bacteria and other organisms, which settle to the floor, from again contaminating the air. Proper sanitation in the preparation and serving of food is essential. Studies made by the army have shown that the recently developed vaccine against the influenza virus types A and B will greatly reduce the incidence of these diseases. Since the duration of the immunity resulting from this vaccine has not been determined and since epidemics of influenza cannot be accurately forecast, it would seem better not to urge vaccination in anticipation of an epidemic. The continuous administration of sulfonamides for prophylactic purposes may lead to drug resistance and thence to epidemics of these infections. Experiments have shown that neither irradiation with ultraviolet light nor the addition of vitamins to an ordinary diet will increase the resistance of industrial workers to infections of the respiratory tract. Measures to protect against the chilling of the body are important.

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Exposure to Tellurium.—Amdur reports accidental single exposure of 3 previously healthy young men to tellurium fume. The total period of exposure in the experimental laboratory was approximately ten minutes. All 3 experienced transient headache and slight epigastric distress within twenty-four hours of their exposure. All 3 were aware of a metallic taste in their mouth. There was no nausea or emesis and nothing to suggest loss or blood from any of the body orifices. The most notable complaint was that of a prominent obnoxious garlic odor present on the breath and in the sweat and presumably due to the detoxification product, dimethyl telluride. Heretofore it has been as protracted as it has been persistent. All 3 patients were given injections of BAL in oil, 2.5 mg. per Kilogram of body weight, deep intramuscularly into the buttock every four hours for the first twenty-four hours and every six hours for the second period of twenty-four hours. Treatment was continued with one injection daily for the ensuing six day period. In 2 patients the garlic odor on the breath and in the sweat had disappeared fourteen days after exposure and in 1 patient thirteen days after the exposure. It is suggested that tellurium may be added to the list of metallic exposures successfully treated with BAL.

Philippine Medical Association Journal, Manila

22:511-576 (Dec.) 1946

Hospital Incidence of Cancer Among Filipinos. J. Z. Cruz.—p. 511.
Venereal Disease Control Program in the Philippines. F. Z. Cruz.—p. 523.
Surgical Approach in Case of Large, Multiple Cystolithiasis Obstructing the Free Passage of Fetal Head. B. C. Fontanilla.—p. 531.
Foreign Bodies in Food and Air Passages. J. N. Cruz.—p. 535.
Surgical Aspects of Scurvy. A. A. Galvez.—p. 543.
Fogging Method of Refraction. G. De Ocampo.—p. 547.

Public Health Reports, Washington, D. C.

62:777-824 (May 30) 1947

*Rickettsialpox—A Newly Recognized Rickettsial Disease: Recovery of Rickettsia Akari from a House Mouse (Mus Musculus). R. J. Huebner, W. L. Jellison and C. Armstrong.—p. 777.
*Plague: Field Surveys in Western United States During Ten Years (1936-1945). N. E. Wayson.—p. 780.
Ultraviolet Irradiation in the Production of Potent Antirabies Vaccines. K. Habel.—p. 791.
Preliminary Studies on Control of Blowflies with DDT. W. C. Baker and L. G. Schwartz.—p. 800.
A New Salmonella Type Isolated from Man: Salmonella Texas. J. Watt, Thelma M. DeCapito and Alice B. Moran.—p. 808.

62:825-864 (June 6) 1947

Control of Tuberculosis in the Americas. T. Parran.—p. 827.
Histoplasmin Sensitivity Among Siblings. Shirley H. Ferebee and M. L. Furcolow.—p. 834.

Rickettsialpox.—Huebner and his associates state that Rickettsia akari, the causative agent of rickettsialpox, was isolated from the blood of persons with this disease and from the rodent mite Allodermanyssus sanguineus Hirst inhabiting the domicile of persons who were ill. The authors isolated R. akari from a house mouse trapped on the same premises—a housing development in the city of New York where more than 100 cases of rickettsialpox have occurred. Infestations of house mice with the mites were described in a previous communication. The ability of A. sanguineus to transmit rickettsialpox to experimental animals was demonstrated. The data presented show that the house mouse (Mus musculus) may harbor the infection in nature.

Plague: Field Surveys in Western United States.—Wayson says that investigations of the circumstances surrounding the death of 2 persons from bubonic plague in July 1908 in a semirural area bordering San Francisco Bay revealed an enzootic of plague among the California ground squirrels. This discovery stimulated explorations to determine the extent to which the infection had spread. Investigations of the circumstances which may influence the epizoology and epidemiology of plague have been carried on concurrently in the field and in the laboratory. All of the laboratory studies confirm previous findings that Pasteurella pestis exhibits consistent characteristics which do not permit differentiation of strains recovered from rats, from other rodents, from fleas or from man. These investigations have also established that each of a number of species of fleas may serve as vector of the disease for different rodent hosts. Foci of bubonic plague among rodents of several genera are widely scattered throughout the area within the north and south boundaries of the United States and from the Pacific Ocean to approximately the 102d meridian west. The rapidity of extension eastward will probably be influenced by the density of the rodent populations and the persistence from year to year of foci in which acute outbreaks recur. An element of chance enters into the fulfilment of conditions favorable to the progressive spread of the disease. It has been disseminated over large areas of the United States, and the possibilities of its introduction into new areas through migrations and through the channels of commerce and transportation are deserving of continuous attention.

Radiology, Syracuse, N. Y.

48:441-562 (May) 1947

*Venous Catheterization of Heart: I. Indications, Technics and Errors. M. C. Sosman.—p. 441.
*Id.: II. Results, Interpretations and Value. L. Dexter.—p. 451.
Cholangiography and Biliary Regurgitation. L. G. Rigler and H. W. Mixer.—p. 463.
Epipericardial Fat Shadows in Differential Diagnosis. J. F. Holt.—p. 472.
Cardioesophageal Relaxation as Cause of Vomiting in Infants. E. B. D. Neuhauser and W. Berenberg.—p. 480.
Lymphoblastoma: Evaluation of Differences in Sensitivity to X-Ray Irradiation of Different Types and Its Application to Quantitative Therapeutic Test. W. L. Palazzo.—p. 484.
*Differential Diagnosis of Intracranial Neoplasms by Cerebral Angiography. C. F. List and F. J. Hodges.—p. 493.
Familial Osseous Atrophy. G. Cooper Jr., N. Adair and W. M. Patterson.—p. 509.
Absorption of Radon Through the Skin and Its Exhalation Through the Lungs. K. Lange and R. D. Evans.—p. 514.
Evolution of Radiology in Latin America. J. T. Case.—p. 517.

Venous Catheterization of Heart.—Sosman reports the results of 100 examinations for congenital heart disease, other forms of heart disease, pulmonocardiac disease and renal function. The technic of heart catheterization is illustrated by roentgenograms. The comfort of the patient is important for the success of the test. Teamwork is essential. Failure to secure adequate or reliable data from this test has been infrequent; only 13 examinations out of 100 were unsatisfactory. Spasm of the vein around the catheter in the arm may prevent passage to the desired spot but has not interfered with withdrawal of the catheter. Venospasm is more apt to occur if the patient is uncomfortable or in pain. When trying to pass the tip of the catheter through the tricuspid valve, ventricular extrasystoles occur in about half of the cases. A few have mentioned an accompanying sensation of tightness in the substernal area or neck. In only 2 instances were the subjective symptoms distressing enough to cause abandonment of the procedure. The dangers most commonly feared are damage to the endothelium of the large veins or of the heart and the possibility of thrombus formation, but no thrombi have been formed. Some patients succumbed to their disease or conditions unrelated to the procedure, and in necropsies no trace of damage could be found.

Value of Catheterization of Heart.—Dexter describes experiences with catheterization of the heart in representative types of congenital heart disease. He concludes that, in order to obtain interpretable results in congenital heart disease, venous catheterization must be performed by a well trained team of at least three persons working smoothly and efficiently, and it should be used in conjunction with the usual procedures of history, physical examination, electrocardiography, fluoroscopy and, if available, the Robb-Steinberg technic of visualization of the cardiac chambers with diodrast. Venous catheterization is essentially a physiologic procedure and has certain limitations. Now that cure or improvement of certain congenital cardiac defects is possible by surgery, venous catheterization promises to be an important aid in preoperative diagnosis.

Cerebral Angiography and Intracranial Neoplasms.—List and Hodges say that in a series of 125 patients with intracranial tumor subjected to angiography at the University of Michigan Hospital a special vascular pattern was observed in angioma, meningioma, glioblastoma and certain types of astrocytoma. Although a characteristic pattern is not always to be found, the angiograms often are so characteristic as to permit a preoperative anatomic diagnosis.

Surgery, St. Louis

21:773-936 (June) 1947

*Surgical Treatment of Hypertension: III. "Neurogenic" versus Renal Hypertension from Standpoint of Operability. G. de Takats and E. F. Fowler.—p. 773.

Fascia Lata Regeneration: Animal Experimentation. J. C. Foshee. —p. 800.

Id.: Final Report. J. C. Foshee.—p. 819.

Acute Suppurative Phlebitis Complicated by Septicemia. H. Neuhof and G. P. Seley.—p. 831.

*Ambulatory Treatment of Phlebitis, Thrombophlebitis and Thrombosis with Compression Bandages. O. Meyer.—p. 843.

*Multiple Retrograde Saphenous Vein Ligation and Phlebectomy with Aid of Malleable Intraluminal Guide. A. M. Vaughn.—p. 851.

Graded Leg Exercises. J. K. Narat and A. F. Cipolla.—p. 861.

Successful Primary Repair of Lacerated Stenson's Duct. R. E. Goodall and Sarah E. Flanders.—p. 865.

*Use of Penicillin in Connection with Grafting of Bone into Infected Defects in Skulls of Experimental Animals. H. J. McCorkle, E. Kerr, S. Rothenberg and Helen Warmer.—p. 870.

Neurofibroma of Posterior Mediastinum. I. D. Puppel.—p. 875.

Curare and Shock: Production of Hemorrhage into Upper Intestine of Dog with Large Doses of Curare. F. Cole, I. D. Baronofsky and O. H. Wangensteen.—p. 881.

Postoperative Protein Deficiency, with Special Reference to Cancer Patient. H. M. Wiley.—p. 889.

Jejunal Malignancy. E. A. Connolly and A. W. Lempka.—p. 901.

Amputation of Index Ray. J. H. Mahoney, G. S. Phalen and W. H. Frackelton.—p. 911.

Surgical Treatment of Ingrown Toenail. B. G. Clarke and K. A. Dillinger.—p. 919.

Surgical Treatment of Hypertension.—De Takats and Fowler report the results of splanchnic nerve section on 19 patients with hypertension. Eleven were females between the ages of 7 and 46 years and 8 were males between 13 and 39. The patients have done well, moderately well and poorly. The operation, a transdiaphragmatic approach, technically left nothing to be desired. The clinical history and renal biopsies made it possible to separate a group of patients who suffered organic renal damage and showed good response to surgery. The so-called neurogenic group (4 of the 19 patients) failed to respond even though there was little or no detectable damage. It is suggested that such hypertension exhibits a hypothalamic-pituitary stimulation which is not mediated by the sympathetic nervous system.

Ambulatory Treatment of Phlebitis.—In the treatment of acute and chronic phlebitis of the legs, Meyer has used for fifteen years the elastic combination bandage. It consists of a 4 inch wide, moist, medicated, viscous, nonsetting, zinc-gelatin type (contura) bandage and a 3 inch wide, elastic, adhesive pressure (pressoplast) bandage. The elastic adhesive bandage is used for compression and grip. By applying a strong and even pressure around the leg to a point above the inflamed vein one succeeds in compressing the dilated veins, thereby restoring function of the valves and normal circulation. The pressure also promotes the absorption of existing thrombi and prevents their detachment from the walls of the veins. The restoration of the circulation prevents formation of new thrombi and removes the swelling. After application of the bandage the patient is told to walk as much as possible, at least 3 miles daily, and to avoid standing. The bandage is changed at first every third day and later twice a week. The treatment cures the phlebitis in the leg by eliminating the venous congestion, thereby removing the locus minoris resistentiae and making it possible for the affected tissues to overcome the infection. The treatment must be supplemented with removal of primary foci in the oral cavity and secondary foci in the jugular veins to prevent reinfection of the veins of the leg.

Retrograde Saphenous Vein Ligation and Phlebectomy.—According to Vaughn, varicose veins may recur after high saphenous ligation combined with retrograde injection. This recurrence following adequate surgery in the femoral triangle may be due to incompetent communicating or perforating veins, which hastens recanalization of the thrombus in the saphenous. Retrograde ligation and excision of segments of the saphenous vein at different levels above and below the knee should interrupt any reverse flow of blood which might come from incompetent communicating or perforating veins higher up. A medium size malleable intraluminal guide facilitates finding the saphenous vein both above and below the knee and, many times in locating an incompetent communicating or perforating vein or aneurysm. A small piece of umbilical tape rolled on itself and attached to a hemostat facilitates dissection of the vein. Longitudinal incisions are superior to transverse incisions in retrograde saphenous ligation and phlebectomy. Retrograde ligation and excision are to be considered superior to retrograde injection.

Penicillin and Bone Grafts in Infected Skulls.—McCorkle and his co-workers produced infected bone defects in the skulls of dogs, contaminating the wounds with street dirt. After the chronic infections had become well established the animals were subjected to operations at which granulations, scar and sequestrums were removed, bone grafts placed in the skull defects and the wounds closed in layers with cotton sutures without drainage. Ten animals were used as controls and the other ten were given 100,000 units of penicillin daily for two days preoperatively and for twenty-one days postoperatively. In the animals treated with penicillin there was satisfactory healing of soft tissues, survival of the bone grafts and union between graft and skull in the presence of both penicillin susceptible and penicillin resistant organisms. These results appear significant when contrasted with the suppuration of the soft tissues and absorption or loss of grafts that occurred in most of the untreated control animals.

Tennessee State Medical Assn. Journal, Nashville

40:137-168 (May) 1947

Problems in Field of Medical Economics. H. H. Shoulders.—p. 137.

Distribution of Medical Care in Tennessee. C. M. Hamilton.—p. 142.

Functions of County Societies. J. C. Burch.—p. 151.

40:169-204 (June) 1947

*Present Day Management of Early Syphilis. D. C. Smith.—p. 169.

Epidemiology and Recent Developments in Poliomyelitis. J. G. Molner. —p. 176.

*Phrenic Paralysis in Treatment of Pulmonary Tuberculosis. F. H. Alley. —p. 181.

External Rupture of Aortic Aneurysm—Case Report. S. M. Vaughan. —p. 187.

Lead Encephalopathy—Case Report. C. W. Woolley.—p. 188.

Management of Early Syphilis.—Smith stresses that a large percentage of cases of early syphilis are not cured by penicillin, regardless of dosage. The relapse rate with all short rapid treatment schedules is high. Therapy should be continued for at least eight to twelve weeks in early syphilis, using penicillin, arsenic and bismuth.

Phrenic Paralysis in Treatment of Pulmonary Tuberculosis.—Alley and Hubbard say that phrenic paralysis is not being employed extensively in the treatment of pulmonary tuberculosis. They wish to stimulate more interest in the use of this method because there is often much to be gained by the use of this procedure and seldom anything is lost by giving it a trial. The procedure used by the authors was to crush the main phrenic trunk, or trunks as are sometimes found, and to resect all accessory phrenic trunks from the fifth cervical root, including the nerve to the subclavicus muscle. If permanent paralysis of the diaphragm was desired, 1 to 2 centimeter sections of all main phrenic trunks as well as the accessory were taken. A study of results obtained from 765 operations on 627 patients indicates the therapeutic value of the procedure and strengthens the belief that phrenic paralysis should receive more consideration in the treatment of pulmonary tuberculosis.

Texas State Journal of Medicine, Fort Worth

43:49-162 (June) 1947

Our Changing Methods. C. C. Cody Jr.—p. 56.

Memorial Address. M. D. Levy.—p. 59.

Management of Emotional Disorders in Adults. M. J. Cooper.—p. 60.

*Eosinophilic Granuloma of Bone. R. N. Cooley and G. D. Carlson. —p. 64.

*Brenner Tumor of Ovary: Two Cases Associated with Postmenopausal Endometrial Changes. J. J. Andujar, G. R. Enloe and W. B. Swift. —p. 70.

Variance of Hydrogen Ion Concentration (pH) of Normal and Abnormal Vaginas. K. J. Karnaky.—p. 73.

Eosinophilic Granuloma of Bone.—Cooley and Carlson say that, since the introduction by Lichtenstein and Jaffe in 1940 of the term eosinophilic granuloma of the bone, considerable information has been gathered about this condition.

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The authors report observations on 10 patients seen in military hospitals during the last three years. The patients complained of pain or discomfort in the region of the bony lesions. Localized tenderness was usually present at the onset but decreased after a period of weeks. Six of 10 patients showed localized soft tissue swelling. Constitutional symptoms were usually absent. Eosinophilia was seen in only 1 of these patients and that was after roentgen therapy. In the x-ray studies the osseous lesions often simulated Schüller-Christian's syndrome. The configuration of the defect was typically round or oval, sometimes cloverleaf, representing bone destruction with replacement by radiolucent granulomas. This created a "punched out" appearance. Most cultures of the curetted material were sterile. Pathologic studies were incomplete, since there have been no deaths. The white or yellowish granulations separated quite easily from the bone and left a slightly roughened margin. A combination of surgical and radiation treatments seemed to produce the best therapeutic results.

Brenner Tumor of Ovary.—Andujar and his co-workers report observations on Brenner tumor occurring in 2 women aged 72 and 64. In each instance hyperplastic endometrial changes were present, in 1 patient of polypoid type, in the other patient of simple Swiss cheese structure. Both patients were relieved of their uterine bleeding by operation. In 1 instance relief followed removal of a large Brenner tumor; in the other it occurred after excision of both the ovarian tumor and the uterus. In view of the continued failure to report hormonal activity of Brenner tumor, the association of hyperplastic uterine bleeding with these tumors is probably purely coincidental. Brenner tumor is probably far more common than one would suppose from the few cases thus far reported.

United States Naval Med. Bulletin, Washington, D. C.

47:391-578 (May-June) 1947

Burns. H. L. Pugh.—p. 391.
Distribution and Use of Human Whole Blood in Pacific War. H. R. Brown Jr.—p. 396.
*Emotion: Etiologic Relation to Illness: E. L. Caveny.—p. 421.
Naval Medical Specialists Units: Proposed Plan for Reorganization and Continuation. R. A. Kern.—p. 429.
Medical Specialists in Naval Service. P. Titus.—p. 438.
Treatment of Acute Acromioclavicular Dislocations. W. A. Gunther and W. E. Snell.—p. 444.
Single Injection Therapy for Gonorrhea. T. Camp.—p. 451.
Nummular Eczema and Prostatitis: Treatment with Penicillin. C. C. Carpenter, C. R. Nuckolls and J. S. Dyke.—p. 453.
Psychiatric Evaluation of Naval Delinquent. L. D. Boshes.—p. 458.
Evaluation of Physical Training Program at Naval Air Station. J. G. Stubenbord.—p. 473.
Observations on Production of Hydrogen Sulfide by Shigella Alkalescens. L. A. Barnes and Joan E. Casterline.—p. 478.
Army-Navy Medical Matériel Coordination. V. W. H. Campbell.—p. 481.
*Critical Analysis Obtained from 873 Electroencephalographic Examinations. R. Rossen.—p. 494.

Emotion in Relation to Illness.—According to Caveny the practitioner of medicine encounters few medical or surgical problems which do not have a psychosomatic component. Instincts as well as personal desires and ideas are constantly being checked and subdued by environmental, educational and social influences. These opposing forces give rise to conflict. If adjustment is faulty, the individual takes recourse to anxiety, headaches, nausea and vomiting. Persons with psychosomatic ailments do not always show manifest symptoms of emotional imbalance; therefore the psychic factors often remain undetected, and this may delay or prevent recovery. Until recently most physicians believed that only gastrointestinal conditions, as peptic ulcers and colitis, could be considered to be psychosomatic. The emotions are now regarded as the primary cause in many cases of bronchial asthma, hay fever, hypertension, heart disorders, the common cold and various dermatologic conditions as hives, warts and allergic reactions, as well as many other physical illnesses. If the emotions are not the primary cause they may be a precipitating or aggravating factor. The general practitioner's job is prophylactic, therapeutic and morale building. He accomplishes this aim by maintaining a philosophy of medicine which makes for a full knowledge of the sick man, a person whose illness may have a social implication. Even though the practitioner appears to perform his job intuitively, he possesses considerable knowledge of psychiatry and the psychosomatic approach as well as the basic principles of psychotherapy.

Analysis from 873 Electroencephalographic Examinations.—Rossen correlates the results of 873 electroencephalographic examinations with the admission and discharge diagnoses of neuropsychiatric patients studied at a United States naval hospital. Of the 226 discharged with the diagnosis of epilepsy, 50 per cent showed abnormal electroencephalograms and 19.9 per cent showed slightly abnormal electroencephalograms. Of the remaining 647 cases with other discharge diagnoses, which included various functional neuropsychiatric and organic neurologic conditions, 18.4 per cent had abnormal electroencephalograms and 20.7 per cent had slightly abnormal electroencephalograms. From comparisons with control series it appears that clinical neuropsychiatric evaluation is at present superior to electroencephalographic examination alone in determining qualification for military service except in convulsive disorders. This is in agreement with other investigators, who thought that the use of electroencephalography in screening army entrants or soldiers who have suffered neurotic breakdown should be engaged in with the utmost caution.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

55:313-362 (June) 1947

Late Pregnancy Toxemia: II. Clinical Trials Based on Experimental Findings. O. W. Smith and G. Van S. Smith.—p. 313.
Protein Therapy and Electrolyte Balance. H. E. Peters Jr.—p. 323.
Perforated Ulcer in a Child: Report of a Case. M. Orlov.—p. 326.
*Circulation Time in Diagnosis and Differential Diagnosis of Thyroid Disease. E. B. Hay.—p. 329.
Hypothyroidism and Its Relation to Gynecologic Problems. L. W. Mason.—p. 338.
Some Aspects of Thyroid Function in Relation to Infertility. D. L. Dickerson.—p. 343.
*Studies on Human Artificial Insemination. A. I. Weisman.—p. 348.

Circulation Time in Differential Diagnosis of Thyroid Disease.—Hay used calcium gluconate for the estimation of the circulation time. He compared the circulation time, basal metabolic rates and blood cholesterol levels of 40 patients with abnormalities of the thyroid, 30 with toxic goiter, 5 with myxedema and 5 with nontoxic adenomatous goiter. The patients with myxedema had a minus basal metabolic rate and a prolonged circulation time. Those with nontoxic adenomas have normal metabolic rates and circulation times. Most of those with toxic thyroids had a high basal metabolic rate and short circulation time. Not all patients with toxic goiters have the classic signs and symptoms; 30 per cent are seen to have either a normal basal metabolic rate or a normal circulation time. It is in these cases that multiple tests are helpful in establishing the diagnosis. In 17 per cent of the cases the circulation time was within normal limits and the basal metabolic rate was elevated. In 13 per cent of the patients the basal metabolic rate was normal and the circulation time short. Here the circulation time was more valuable in the diagnosis. In only 70 per cent of toxic goiters were the basal metabolic rate and the circulation time both diagnostic, and in only 60 per cent of the cases were all three—the basal metabolic rate, circulation time and blood cholesterol—diagnostic. The author makes a plea for multiple tests in evaluating toxic goiter, at least in the borderline cases. The circulation time is not a substitute for clinical evaluation or any other helpful tests in the diagnosis of toxic goiter. It was not a good criterion for determining the optimal time of operation in this series.

Human Artificial Insemination.—Eighty-seven apparently fertile women whose husbands were definitely sterile were inseminated artificially with donor semen over a period of seven years. Seventy-four of the women became pregnant. Follow-ups of the successful cases revealed that children conceived by this method were physically and mentally as sound as children produced by the natural method. Weisman says that the most valuable finding of the follow-up survey was the healthy psychologic relationship of the family unit having a child derived through artificial donor insemination.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine, Liverpool

41:1-164 (May) 1947. **Partial Index**

Observations on Use of Sodium Antimony Gluconate (Sodium Stibogluconate) in Treatment of Kala-Azar. R. Kirk and M. H. Sati.—p. 14.
Attempts to Induce Blackwater Fever Experimentally. G. M. Findlay and J. L. Markson.—p. 22.
Modification of Trypanosoma Rhodesiense on Prolonged Syringe Passage. H. Fairbairn and A. T. Culwick.—p. 26.
Studies on Synthetic Antimalarial Drugs: The Absorption, Distribution and Excretion of Paludrine in Experimental Animals. A. Spinks.—p. 30.
Modification of Zinc Sulfate Centrifugal Flotation Technic for Concentration of Helminth Ova and Protozoan Cysts in Feces. J. M. Watson.—p. 43.
Effect of Intramuscular Injection of Paludrine and Quinacrine in Experimental Animals. J. R. M. Innes.—p. 46.
Aortic Size in East African Natives. G. W. A. Dick.—p. 52.
Trypanosome Counts in Trypanosoma Congolense Infections. S. G. Laws.—p. 116.
Sodium Stibogluconate in Treatment of Kala-Azar: Report on Treatment of 8 Cases and Appearance of Probable Drug Reactions. B. Maegraith, J. C. Brundrett, J. D. Rigby and R. A. Sladden.—p. 118.
*Part Played by Feces and Vomit-Drop in Transmission of Endameba Histolytica by Musca Domestica. E. W. Roberts.—p. 129.
Investigation into Effects of "Gammexane" on Larvae, Pupae and Adults of Culicoides Impunctatus Goetghebuer and on Adults of Culicoides Obsoletus Meigen. Marjorie A. Hill and Enid W. Roberts.—p. 143.
Nematodes in Tsetse. W. E. F. Thomson.—p. 164.

Transmission of Endameba Histolytica by Musca Domestica.—A survey of the literature and experiments convinced Roberts that a fly given access to infected material may transmit Endameba histolytica cysts in its feces. Experiments have shown that the period during which the fly can be regarded as a source of infection by this route may extend from five minutes to at least thirty-one hours after the initial infective feeding—the limit of the observations—and that during this period cysts are excreted in considerable, though irregular, numbers. Studies on the part played by the vomit drop in the spread of E. histolytica cysts prove that E. histolytica cysts taken up by house flies during the act of feeding subsequently appear in their vomit drops at irregular intervals and in irregular numbers throughout an observation period of nine hours after the initial infective feeding. The route taken by the cysts occurring in the vomit drop has not been definitely ascertained. It is generally believed that in urban areas polluted drinking water and food handlers are the main sources of infection with amebic dysentery. In rural areas, particularly in the tropics, flies may prove of greater importance, for, under such conditions, not only do they tend to occur in greater numbers but, owing to lack of sanitation, they have readier access to infected excreta and to human food supplies.

British Journal of Radiology, London

20:221-260 (June) 1947

The Jubilee of the Röntgen Society. A. E. Barclay.—p. 221.
Interpretation of Children's Chest X-Rays. L. G. Blair.—p. 223.
Note on Use of Lysholm Skull Table. D. Gordon.—p. 238.
Quantitative Analysis of Direct and Indirect Action of X Radiation on Malignant Cells. Ilse Lasnitzki.—p. 240.
Device to Facilitate the Production of X-Ray Isodose Curves. R. G. Mitchell.—p. 248.

British Medical Journal, London

1:795-818 (June 7) 1947

Centennial of the American Medical Association. M. Fishbein.—p. 795.
Sulfone Treatment of Leprosy. E. Muir.—p. 798.
*Tropical Eosinophilia in East Africa. H. T. H. Wilson.—p. 801.
*Causalgia of the Face: 2 Cases Successfully Treated by Sympathectomy. J. A. W. Bingham.—p. 804.
Inpatient Treatment of the Maladjusted Child. Elizabeth G. W. Barker and W. L. Milligan.—p. 805.

Tropical Eosinophilia in East Africa.—According to Wilson the syndrome now generally known as tropical eosinophilia or eosinophilic bronchitis was first described by Frimodt-Möller and Barton in southern India in 1940. Weingarten in 1943 reported 81 cases of tropical eosinophilia. While tropical eosinophilia can no longer be regarded as a rare disease in India and Ceylon, its existence in Africa has not yet been generally recognized, although isolated cases have been reported. Wilson performed differential white blood cell counts on a consecutive series of 34 patients attending the native civil hospital in Dar-es-Salaam, Tanganyika, with symptoms of recurrent bronchitis or asthma. In 6 the eosinophilia ranged from 40 to 78 per cent. This group and a seventh patient referred on account of an unexplained eosinophilia were submitted to detailed investigation. All had tropical eosinophilia. Six were treated successfully with arsenic, while the seventh recovered spontaneously. The characteristic picture appeared to be recurrent attacks of cough, wheezing and low fever separated by intervals in which the only symptom was a spasm of unproductive coughing in the morning. The etiology of tropical eosinophilia remains obscure. Löffler in 1936 described a syndrome characterized by fever, cough and eosinophilia which resembles tropical eosinophilia but seldom lasts more than eight days, whereas tropical eosinophilia, if untreated, may persist for years. It seems unlikely that the two conditions are identical. The detection of tropical eosinophilia in 6 of 34 patients with chronic cough or asthma suggests that the condition is relatively common in East Africa.

Causalgia of Face.—Bingham observed 2 cases of causalgia of the face. The first patient had sustained a small penetrating wound of the right cheek. Burning pain on the right side of the face developed on the day he was wounded and was still present a year later. Hyperalgesia of the skin supplied by the three divisions of the trigeminal nerve was present. The facial pain was completely relieved by a procaine block of the stellate ganglion. When the pain returned, it was decided to excise the superior cervical sympathetic ganglion. This operation relieved the facial pain and tenderness, and there was no sign of their return three months later. In the second patient, who had sustained multiple mortar wounds on the side of the face and head, there developed a continuous burning pain, usually confined to the maxillary division of the trigeminal nerve. In this patient the lower half of the superior cervical ganglion and a portion of the sympathetic chain were excised, and facial tenderness and pain were relieved.

Journal of Hygiene, London

45:111-250 (May) 1947. **Partial Index**

Nature of Somatic Phase Variation and Its Importance in Serologic Standardization of O-Suspensions of Salmonellas for Use in Widal Reaction. W. Hayes.—p. 111.
Craigie's Vi Phage Method and South African Strains of B. Typhosus, with Special Reference to Typhoid Carriers. C. G. Crocker.—p. 118.
Studies in Dynamics of Disinfection. R. C. Jordan, S. E. Jacobs and H. E. F. Davies.—p. 136.
Fatal Meningitis Due to a Capsulated Neisseria. A. L. M. Christie and G. T. Cook.—p. 149.
*Bacteriologic Investigation of Washing and Sterilization of Food Containers: Report to the Medical Research Council. R. Knox and Jacqueline Walker.—p. 151.
Experiments on Infection of Cows with Typhoid Bacilli. W. M. Scott and F. C. Minett.—p. 159.
Improved Guns for Delivery of Liquid DDT Spray and Powder by Mechanical Compressors. I. Gordon.—p. 173.
Mosquito Repellents: Report of Work of Mosquito Repellent Inquiry, Cambridge 1943-1945. S. R. Christophers.—p. 176.
Survey of Tuberculosis in Industrial County of Lanarkshire, Scotland. T. G. Brown.—p. 232.

Bacteriologic Studies on Food Containers.—Outbreaks of food poisoning induced Knox and Walker to investigate bacteriologically the conditions in a central meals kitchen from which about 3,000 meals were issued daily. Plate counts showed that the containers in which the meals were sent out contained large numbers of organisms, from several thousand to several hundred thousand. Counts of this order were obtained both before and after the routine method of washing. These counts were reduced to the order of a few hundred or less per container by steam sterilization. Exposure for two to three minutes to steam from a simple jet sterilizer was effective for all except large insulated lids, which required at least five minutes. Treatment for five minutes in a chamber filled with steam from a boiler was effective with all types of containers and lids tested. If containers are to be sterilized at all, they must be sterilized each time they are to be used. Counts almost as good as those given by steam sterilization were obtained by washing with soap and water at 48 to 50 C., wiping with a sterilized dish cloth and then rinsing in a second sink of water at 75 to 80 C.

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J. of Neurol., Neurosurgery and Psychiatry, London

10:1-48 (Feb.) 1947

Use of Mental Tests for Measurement of Disability After Head Injury: Comparison Between Results of Tests in Patients After Head Injury and Psychoneurotics. G. Tooth.—p. 1.
Marbled Condition of Corpus Striatum Following Birth Injury. R. M. Norman.—p. 12.
"Pins and Needles": Observations on Sensations Aroused in Limb by Application of Pressure. G. Weddell and D. C. Sinclair.—p. 26.

Lancet, London

1:775-814 (June 7) 1947

Social Aspects of Epilepsy. J. T. Fox.—p. 775.
Infective Jaundice in Iceland. L. S. Anderson.—p. 778.
*Prenatal and Postnatal Development of Immunity: Serum Albumin and Serum Globulin Levels in Maternal and Cord Bloods of Premature Infants. C. Rimington and J. A. Bickford.—p. 781.
Hypoglycemia Due to Islet Cell Adenoma of Pancreas. R. L. Bishton and J. M. Malins.—p. 785.
Blood Urea in the First Nine Days of Life. R. A. McCance and E. M. Widdowson.—p. 787.
Postvaccinal Encephalitis: 2 Probable Cases in African Children. J. N. P. Davies.—p. 788.
Diseases of Thyroid Gland in Occupied Belgium. P. A. Bastenie.—p. 789.
Gumma of the Thyroid. A. H. Barber.—p. 791.

Prenatal and Postnatal Development of Immunity.—Rimington and Bickford point out that little is known about serum protein levels of infants and their mothers at and before parturition. The present investigation was undertaken to fill this gap and so provide a basis for a possible relation between susceptibility to neonatal infections and the degree of development of the protein elaborating mechanisms. Determinations were made of the total protein, nonprotein nitrogen, albumin and globulin in the maternal and cord blood from 38 cases, mainly of premature birth, the youngest fetuses being 20 weeks old. The fetal albumin and globulin increase with the length of gestation and at about the same rate. Mean full term values were 4.16 Gm. per hundred cubic centimeters for albumin and 2.37 Gm. per hundred cubic centimeters for globulin. The maternal albumin and globulin are not affected by the length of gestation and are only slightly correlated with the fetal values. It is suggested that there may be a fetal mechanism of synthesis of both albumin and globulin which becomes relatively less important as the adult mechanisms of synthesis develop and take its place. The serologic immaturity of the newborn would be understandable on this basis.

Transactions Roy. Soc. Trop. Med. and Hyg., London

40:511-726 (May) 1947

Recent Knowledge About Malaria Vectors in West Africa and Their Control. R. C. M. Thomson.—p. 511.
Transmission of Malaria in Borneo. J. McArthur.—p. 537.
Action of Gammexane on Arthropods of Medical and Veterinary Importance. J. S. Steward.—p. 559.
Destruction of Adult Mosquitoes by Residual DDT Methods. L. G. Eddey.—p. 567.
*Residual Action of DDT Against Anopheles Gambiae and Funestus. K. S. Hocking.—p. 589.
Experiments with DDT on Various Species of Tsetse Flies in Field and Laboratory. F. L. Vanderplank.—p. 603.
Sidelights on Malaria in Man Obtained by Subinoculation Experiments. N. H. Fairley—p. 621.
*Monkeys in Relation to Yellow Fever in Bwamba County, Uganda. A. J. Haddow, K. C. Smithburn, A. F. Mahaffy and J. C. Bugher.—p. 677.
Behavior of Sudan Strain of Leishmania Donovani in Phlebotomus Papatasii: Comparison of Strains of Leishmania. S. Adler.—p. 701.
Mucocutaneous Leishmaniasis in Kenya: Note on Penicillin Treatment. F. Piers.—p. 713.
Exoerythrocytic Schizogony in Plasmodium Kochi Laveran. P. C. C. Garnham.—p. 719.

Residual Action of DDT Against Gambiae and Funestus.—The experiments described by Hocking were undertaken to provide guidance in the practical employment of DDT impregnation as an antimalarial measure in the East Africa command. It is concluded that Anopheles gambiae and Anopheles funestus tend to leave a lightly treated building, but that with an impregnation of about 200 mg. per square foot final mosquito mortality approaching 100 per cent will be achieved and that on most surfaces the effect will last for at least four to six months. Limewash, particularly if recently applied, neutalizes the residual action of DDT on walls.

Monkeys in Relation to Yellow Fever in Uganda.—Haddow and his associates say that for several years studies on the epidemiology of yellow fever have been conducted in Bwamba County, Uganda. The work has included the collection of blood samples from wild monkeys for examination by the protection test. Many other groups of animals also have been investigated, but so far immunity to yellow fever has been found only in monkeys. Twelve species and subspecies of monkeys have been found to occur in Bwamba. In addition there are two members of the suborder Lemuroidea. It is suggested that the lowland colobus monkey (Colobus polykomos uellensis Matschie) is the main species involved in the monkey to monkey yellow fever cycle of the uninhabited forest areas, that the redtail (Cercopithecus nictitans mpangae Matschie) plays an important part in bringing the virus into contact with man and that the remaining species are of less importance in the local epidemiology. In Bwamba the susceptible monkey population becomes immunized at the rate of 27 per cent annually. This observation, in conjunction with other evidence, indicates that yellow fever is truly endemic among the monkeys of the Bwamba lowlands.

Presse Médicale, Paris

55:357-368 (May 31) 1947

Hematogenous Meningotyphoid Fever. A. Raybaud, R. Depieds and G. Giraud.—p. 357.
Early Diagnosis of Cancer of Uterus by Cytologic Examination of Cervical Secretions. A. Guidoux.—p. 358.
*Genitohypophysial Reflex and Ovulation. R. Segond.—p. 359.
Penicillin Treatment with Delayed Elimination. M. Morgenstern and A. Grimberg.—p. 360.

Genitohypophysial Reflex and Ovulation.—According to Segond, stimulation of the genital sphere brings into play a neuroangiotropic reflex which itself is to be considered as generator of a pituitary glandular action on the ovulation. Stimulation of the superior cervical ganglion induces hypophysial secretion of the follicle stimulating and luteinizing factors of anterior pituitary-like principle. The deficiency of the gonadotropic pituitary-like principle may be considered responsible for lack of ovulation. Laboratory proof of this concept was furnished: During the first eight days of the cycle pituitary hormone was not demonstrable in the urine; the absence of this secretion was confirmed by a negative test on mice not arrived at puberty. Stimulation at the level of the uterus (dilation of the cervix, lipiodol) was carried out, followed next morning by a repeated search for chorionic gonadotropin in the urine. This time the test was positive: there was macroscopic evidence of the development of the genital tract and of follicle growth on the surface of the ovary, confirmed by microscopic demonstration of numerous ripe follicles. Any treatment of sterility in women must be directed to ovulation by the reflex route producing a genitohypophysial reflex. Numerous pregnancies resulted from cervical dilation on the sixth day of the cycle repeated at the same date for three months, but the whole procedure had to be repeated again for each new pregnancy.

Semaine des Hôpitaux de Paris

23:1163-1212 (May 14) 1947

Antiphage Properties of Blood Serum in Latent Infections and Septic Postoperative Accidents. A. Raiga.—p. 1163.
Isolated Cold Abscess of Appendix. P. Funck-Brentano.—p. 1169.
*Cancer of Stomach in First Two Decades of Life. P. Funck-Brentano and R. Tubiana.—p. 1171.

Cancer of Stomach in Children and Adolescents.—Funck-Brentano and Tubiana report cancer of the stomach in a boy aged 15. Subtotal gastrectomy of the Polya type was performed. Microscopic examination revealed an ulcerated epithelioma with multiple metastases of lymph nodes. The boy was alive six months after the operation; he had gained weight and had no complaints. Analysis of 92 cancers of the stomach in children and adolescents less than 20 years of age reported in the literature demonstrates that the condition is extremely rare under 20 years of age but ceases to be exceptional over 20. Sixty-nine of the 92 patients had epithelioma, 17 had sarcoma and 6 had Krukenberg tumor. Epithelioma is the least rare in children and adolescents, as it is in adults. The symptomatology of cancer of the stomach is polymorphic and does not differ

from that in the adult. Roentgenography offers considerable aid to diagnosis. Interpretation of the roentgenograms should be made without regard to the age of the patient. Gastrectomy is the preferred method of treatment. The risk of postoperative anemia does not seem important in spite of the youth of the patients operated on.

Schweizerische medizinische Wochenschrift, Basel

77:467-490 (April 26) 1947

Riedel's Ligneous Struma and Focal Infection. M. Richard.—p. 471.
Intestinal Invagination. E. Juillard.—p. 474.
*Local Penicillin Treatment of Diphtheria and of Diphtheria Bacilli Carriers: Experiences in 45 Cases. Verena Gut.—p. 476.
Method of Staining for Microscopic Examination of Spirochetes. S. Vágó.—p. 479.
*Comparative Sedimentation Rates for Erythrocytes Following Autohemotherapy as New Diagnostic Aid. W. Ruge.—p. 480.
Special Exercise Treatment of Arm Amputation Stumps in Preparation and Supplementation of Kineplastic Operations. H. Moser.—p. 484.
Endothelial Leukocytes. P. B. Grawitz.—p. 486.

Local Penicillin Treatment in Diphtheria.—Gut used local penicillin therapy in the form of a spray. At first she used a concentration of 250 units per cubic centimeter, but later the concentration was increased to 1,000 units. There was no difference in the efficiency of these two concentrations. The spray was applied three times daily on the pharynx and tonsils, as well as into the nostrils. Of the 45 patients treated, 26 had pharyngeal diphtheria and 19 were bacillus carriers. The local penicillin therapy of diphtheria patients and of carriers resulted in a noticeable shortening of the period of isolation: freedom from bacilli was achieved within thirty days in 71 per cent of the patients, whereas this occurred in only 25 per cent before penicillin was used. Penicillin therapy is given in addition to serum therapy, not in place of it. In the severest cases penicillin can be given also parenterally.

Sedimentation Rate of Erythrocytes Following Injection of Own Blood.—Ruge points out that the erythrocyte sedimentation rate, which is determined by the amount of coarse disperse colloids in the blood, shows certain fluctuations, depending on the tissue destruction and the rapidity of transition into the blood stream. Injection of a person's own blood (autohemotherapy) increases the permeability of the capillary endothelium and facilitates the exchange of tissue and blood colloids. In healthy subjects the fluctuation caused by autohemotherapy never exceeds 20 per cent. Higher accelerations of sedimentation rates following autohemotherapy indicate that the colloid content of the tissue exceeds that of the blood. In this manner foci of infection can be disclosed. In infectious diseases the comparative sedimentation rates before and after injection of the person's own blood permits a more exact prognosis in that it can be learned whether the disease process is increasing or receding. Especially in articular rheumatism, tuberculosis and after carcinoma operations the comparative sedimentation rates permit a more exact prognosis than does the simple sedimentation reaction.

77:539-580 (May 24) 1947. **Partial Index**

Acute Phlegmon of Gastric Wall. E. Forster.—p. 541.
Natural and Artificial Radioactivity. E. Heller.—p. 542.
Pneumoradiography of Knee Joint. O. Häuptli.—p. 549.
Appendicitis and Pregnancy: Differential Diagnosis. A. Scharplatz. —p. 551.
*Diagnostic Value of Wohlgemuth's Reaction in Acute Pancreatitis. R. Weyeneth.—p. 552.
*Medical Prophylaxis of Silicosis. R. Stucki.—p. 554.
Importance of Retrograde Pyelography in Diagnosis of Paranephritic Abscess. H. Mäder.—p. 560.

Diagnostic Value of Wohlgemuth's Reaction in Acute Pancreatitis.—Most surgeons agree that when acute pancreatitis does not result in abscess formation it should be treated conservatively, since surgical intervention may make the prognosis even more unfavorable. If a patient complains of severe continuous pain in the upper part of the abdomen, chiefly on the left side, with possibly radiation to the left shoulder, if there are signs of shock with intestinal intoxication, if the vomit contains water and bile but no fecal material, if there are sweating and cyanosis of the extremities, small pulse, lowered blood pressure and hypothermia and if there is a history of biliary disturbances, acute pancreatitis should be thought of. The differential diagnosis must rule out cholelithiasis, ileus, gastrointestinal perforation, ruptured appendix, angina pectoris, mesenteric thrombosis and renal disorders on the left side. If these conditions have been ruled out and the determination of the diastase in the urine according to Wohlgemuth's method reveals increased values, the diagnosis of acute pancreatitis is almost certain. Since Wohlgemuth's test has a failure rate of about 20 per cent, it can be relied on only in connection with the clinical picture. The author also mentions the occurrence of hyperglycemia and excessive elimination of insulin in acute pancreatic disorders and stresses that in future these incretory disturbances should be watched for in addition to the urinary diastase values.

Medical Prophylaxis of Silicosis.—Stucki cites the high compensation payments for patients with silicosis as an indication of the seriousness of this problem in Switzerland. In 1945 compensation payments to persons with silicosis were more than eight times as high as for all other occupational diseases. A decree of the Swiss Federal Council concerning silicosis in miners and in men who blast tunnels has made medical prophylaxis of silicosis obligatory. The fact that men who blast tunnels never remain very long in the same vicinity makes continued observation difficult. For this reason the author emphasizes the necessity of a central organization for the prophylaxis of silicosis which could be arranged and supervised by the Swiss accident insurance organization.

Día Médico, Buenos Aires

19:729-772 (May 19) 1947. **Partial Index**

*Primary Cancer of Gallbladder. H. Larre.—p. 768.

Primary Cancer of Gallbladder.—Cancer of the gallbladder was associated with biliary lithiasis in 7 out of 9 cases reported. Clinical diagnosis was made too late for effective treatment. Cholecystectomy improves the prognosis if it is performed in the precancerous stage. Microscopic examination of frozen sections of the removed gallbladder should be routine. Removal of the gallbladder bed is necessary if cancer cells are found in the sections.

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Medicina Latina, Havana

6:89-162 (March-April) 1947. **Partial Index**

*Diet in Therapy of Typhoid. M. A. Landa Bacallao.—p. 107.

Diet in Treatment of Typhoid.—Forty patients with typhoid were given a liberal, well balanced, mixed, high calory diet rich in vitamins and minerals. Two patients died. The febrile period varied between twenty and thirty days. Nervousness, mental symptoms and insufficient peripheral circulation, which frequently appear in the course of a liquid diet, did not appear in the course of this treatment. Hemorrhage occurred in only 1 patient. Transient recurrence was observed in 2 patients. Convalescence was shortened to one week in the majority. The nutritional condition after the disease was good. The results of treatment with a liberal diet are encouraging.

Minerva Medica, Turin

38:499-514 (May 26) 1947. **Partial Index**

Pathogenic Considerations on Shortening of Coagulation Time in Some Types of Hemorrhagiparous Hemopathy. N. Quattrin.—p. 499.
*Clinical, Roentgenologic and Histopathologic Contribution to Study of Pancoast Syndrome. G. Fregonara.—p. 504.

Pancoast Syndrome.—Fregonara reports 4 cases of Pancoast syndrome in men between the ages of 27 and 51. A primary tumor of the lung with metastases in the cervical lymph nodes was demonstrated on microscopic examination in 1 case, and clinical and x-ray observations were suggestive of primary cancer of the lung in 2 cases and of a secondary neoplasm with metastasis taking place from a previously removed tumor of the testicle in 1 case. All patients presented pain in the scapulohumeral region and in the lower cervical and upper dorsal regions. The entire Horner syndrome was present in 3 patients and partly in 1. Opacities were demonstrated on x-ray examination in the apexes of 3 patients. Skeletal changes of osteolytic type were present in the initial stage of the disease, and total destruction of the costal segments of the posterior wall in the final stage. Coutard's method of roentgen irradiation had only a temporary effect on the severe pain.

Semana Médica, Buenos Aires

54:453-492 (April 10) 1947. **Partial Index**

*Meningeal Hemorrhage: Was It Caused by Poliomyelitic Virus? A. Aubin, F. Albert and M. Blanco.—p. 473.

Meningeal Hemorrhage.—A normal child aged 4 years suddenly presented hemiplegia and symptoms of acute infection and of meningitis. The cerebrospinal fluid was hemorrhagic and did not contain tubercle bacilli. The child got well but showed a poliomyelitis-like sequel in a leg. Aubin and his associates believe that essential meningeal hemorrhages are caused by a virus, the poliomyelitis virus in the reported case.

Deutsche medizinische Wochenschrift, Stuttgart

71:281-332 (Dec. 13) 1946. **Partial Index**

Active Hypnotic Exercises and Change of Hypnotic Technic. E. Kretschmer.—p. 281.
Action of Penicillin on Blood Picture. J. Lehmann.—p. 287.
Penicillin Therapy of Surgical Infections. E. Bumm.—p. 291.
Rhesus Factor and Its Clinical Significance. L. Heilmeyer.—p. 294.
Blood Group System Rh/rh as Cause of Disease. J. Bürgers and P. Dahr.—p. 296.
†Rh Factor and Blood Transfusion. Tischendorf.—p. 300.
*Hereditary Erythrocytic Factor Rh in Connection with Accumulated Unclarified Abortions, Stillbirths and Pregnancy Toxicoses, with Consideration of Its Significance in Erythroblastoses. A. Stadtmüller.—p. 302.
Artificial Production of Lactation. E. Fauvet.—p. 304.
*Herpes Zoster Encephalitis. W. Schmidt.—p. 308.

72:1-48 (Jan. 17) 1947. **Partial Index**

New Treatment of Diffuse Toxic Goiter and of Hyperthyroidism with Thiouracil Derivatives. W. Hadorn and K. Beer.—p. 1.
Present State of Chemotherapy of Bacterial Infections with Sulfonamides. G. Domagk.—p. 6.
Effect of Combination of Sulfonamides with Various Points of Attack (De-Ma) on Course of Sulfonamide Resistant Septic Aspects of Disease and Its Explanation by Concept of Multiple Blockage in Chain of Ferments. L. Heilmeyer and W. Keiderling.—p. 13.
Combating Thrombosis Rationally for Achieving Surgery Free of Embolism. E. Rehn.—p. 18.
Local Effect of Female Sex Hormones. H. Runge.—p. 25.
Study of Circulation in Man with Continuous Registration Methods. K. Matthes.—p. 28.

72:49-96 (Feb. 14) 1947. **Partial Index**

Aporrhea and Aporrheics: Contribution to Knowledge of Functional Destitution. W. Hellpach.—p. 49.
Sepsis and Its Manifestations. K. Bingold.—p. 56.
Hereditary Psychic Characteristics. H. W. Gruhle.—p. 62.
Sulfonamide Treatment of Abortion Associated with Fever. K. J. Anselmino.—p. 63.
De-Ma Therapy of Puerperal Infections: Preliminary Report. P. Bernhard.—p. 66.
Present State of Chemotherapy of Bacterial Infections with Sulfonamides (concluded). G. Domagk.—p. 71.
Effect of Combination of Sulfonamides with Various Points of Attack (De-Ma) on Course of Sulfonamide Resistant Septic Aspects of Disease and Its Explanation by Concept of Multiple Blockage in Chain of Ferments. L. Heilmeyer and W. Keiderling.—p. 74.

Rh Factors and Blood Transfusion.—Tischendorf reports that complications developed in 3 patients after transfusion of Rh positive erythrocytes to Rh negative recipients. The first patient, a woman aged 41 with the typical signs of hemolytic spherocytic anemia, developed a severe hemolytic reaction following transfusion of 300 cc. of Rh positive blood. This woman had typical congenital hemolytic icterus, the hereditary character of which was proved by the fact that a brother had undergone splenectomy for the same condition. The complication following the blood transfusion became manifest as an alarming febrile hemolytic reaction with increase in anemia. It was the result of the action of the anti-Rh agglutinins of the Rh negative recipient on the Rh positive erythrocytes of the donor. The second patient, a woman aged 26, also had a typical hemolytic spherocytic anemia. The woman had had a subicterus five years previously, when hemolytic icterus had become manifest with the symptoms of cholelithiasis. Pregnancy complicated the icterus, and when the hemolytic anemia progressed following a blood transfusion (Rh factor of donor not determined) the pregnancy was interrupted. A resulting septic condition and the severity of the anemia required renewed blood transfusions. It was later found that the resulting hemolytic reactions resulted from the fact that the donors had been Rh positive, whereas the patient was Rh negative and moreover had Rh antibodies. The third patient, an Rh negative woman aged 31, had given birth to a child with erythroblastosis. Inadvertently the patient was given a transfusion of Rh positive blood, with fatal results.

Relation of Rh Factors to Abortions, Pregnancy Intoxications and Erythroblastoses.—Stadtmüller points out that abortions and stillbirths are frequently mentioned in the histories of families with erythroblastosis fetalis. He studied the Rh factor in women who had had repeated unexplained abortions or who had had pregnancy toxicoses. In 57 cases he was unable to corroborate the suspected causal connection. He thinks that for better clarification of the significance of the Rh factor it is advisable also to record negative observations.

Herpes Zoster Encephalitis.—Schmidt relates that a man aged 56, who had herpes zoster in the region supplied by the first branch of the trigeminus, died as a result of a simultaneously existing meningoencephalitis, which, however, had not been recognized. Drowsiness was one of the most noteworthy signs. In this respect the condition resembled Economo's lethargic encephalitis. The herpes zoster, like all other forms of virus encephalitis, is chiefly a polioencephalitis. The medulla and pons were most severely involved in the case under consideration. Further observations will be necessary to ascertain whether this localization of the inflammatory foci is typical for zoster encephalitis. The type of the microscopic changes is largely identical with those observed in other forms of virus encephalitis, particularly in those with epidemic encephalitis, except that the substantia nigra is less severely involved than in epidemic encephalitis.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:973-1048 (April 26) 1947

Pathologic Chemistry of Lipoid Nephrosis. S. van Creveld and P. H. Arons.—p. 985.
*A "Blackwater Fever House" in Batavia. Kho Lien Keng and Loe Ping Kian.—p. 994.
Penicillin in Treatment of Peritonitis. J. Kweekel.—p. 1004.
Autochthonous Malaria in Region Formerly Free From It. G. D. Hemmes and A. Punt.—p. 1007.

A Blackwater Fever House.—Kho Lien Keng and Loe Ping Kian report a blackwater fever house in which 12 members of a family were continuously exposed to malaria during the three and one-half years of Japanese occupation. One year after the beginning of this exposure the first case of blackwater fever occurred. In all, 8 persons suffered from blackwater fever once or repeatedly. During twenty years preceding this period these people had lived in a quarter of the town where there was but little malaria. In those years they had fever attacks only rarely and never blackwater fever. Blackwater fever was also absent during two years after the family had left the severely infected neighborhood. There was a definite relationship between the outbreak of blackwater fever and the frequency of the malarial attacks. The use of quinine seemingly had no decisive influence on the development of blackwater fever.

91:1049-1128 (May 3) 1947

Acute Laryngitis with Purulent Pericarditis and Pleural Empyema a Septic Syndrome Caused by Hemophilus Influenzae. A. van der Sar.—p. 1053.
*Thyrotoxic Crises During Treatment with Thiourea and Methylthiouracil. J. A. G. ten Berg.—p. 1060.
Pulmonary Abscess as Observed in Tuberculous Dispensaries. R. Drion.—p. 1069.
Simple Apparatus for Directing Nail in Fractures of Neck of Femur. N. G. Geelkerken and J. D. Bom.—p. 1075.

Thyrotoxic Crises During Treatment with Antithyroid Substances.—Three cases are reported by ten Berg in which the symptoms of toxic diffuse goiter or of hyperthyroidism became more severe at the onset of treatment with thiourea and methylthiouracil respectively. In 1 of the 3 cases a veritable crisis developed. These cases differ from the hundreds of cases in which preoperative treatment with thiouracil never resulted in a postoperative crisis. The author thinks that the aforementioned cases can be explained by the theory advanced by Mahaux about spontaneous and postoperative hypothyroid crises. Strictly executed treatment with methylthiouracil reduces the thyroxine content of the blood greatly. After the operation there is a great need for thyroxine, which results in a greater production of the substance stimulating thyroxine and in a stimulation of the diencephalon. The author mentions

2 other cases in which crisis developed following strumectomy for which the patients had been prepared by methylthiouracil medication and in whom the basal metabolism had decreased to less than normal.

91:1129-1208 (May 10) 1947

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Acta Chirurgica Scandinavica, Stockholm

95:291-386 (April 19) 1947. **Partial Index**

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*Contribution to Study of the So-Called Glomus Tumors. L. Löfgren. —p. 25.
Results of Treatment of Carcinoma of Corpus Uteri in Woman's Clinic in Helsinki During Years from 1931 to 1946. V. Turtola.—p. 47.
Subcutaneous Injuries of Pancreas. V. Taivainen.—p. 63.

Glomus Tumors.—Löfgren says that, although the literature on glomus tumors has somewhat increased, this type of tumor is not sufficiently known. The earlier literature had applied various terms to the tumor, but Masson in 1924 showed that it arises from the "neuromyoarterial glomera"; hence the term glomus tumor. Reviews of cases collected from the literature indicate that the sex distribution is about equal. Localization under the nail and other digital locations is seen almost exclusively in female patients, whereas localization to other parts of the extremities is more usual in males. Glomus tumors occur in patients of all ages and usually appear singly. They develop slowly and are rarely larger than a pea. They are mostly small, bluish, elastic, extremely tender tumors. The slightest pressure from clothing may cause intense pain. Surgery is the only effective treatment. The author reports 3 cases of glomus tumor, in 2 of which the tumor was located on the lip; in the third it was on the finger.

Nordisk Medicin, Gothenburg

33:715-756 (March 21) 1947

Serum Proteins in Old Persons. J. Bock.—p. 715.

Hygiea

Scarification Treatment. G. Biörck, O. Gåhle and C. Westman.—p. 739.
Ileus in Pregnancy. E. von Post.—p. 744.
*Cramps and Restless Legs in Acute Poliomyelitis. R. Luft and Ragnar Müller.—p. 748.

Cramps and Restless Legs in Acute Poliomyelitis.—Luft and Müller state that cramps in acute poliomyelitis seem not to have been previously reported in the literature. Of 32 patients (22 observed for one to two years, 10 for ten to twelve years) 15 had cramps localized in muscles affected during the acute stage of the disease. The occurrence of the cramps does not seem to depend on the degree of injury of the peripheral motor neuron. There is no relationship between the degree of paresis and the frequency and intensity of the cramps, which in most of the cases reported were constant during the time of observation. When cramps are especially troublesome, quinine gives good results. Of 18 patients in whom one or both legs were affected during the acute stage 3 (2 observed for ten years, 1 for one year) had restless legs with paresthesia usually in the lower part of the leg, sometimes in the thigh. Restless legs are ascribed to a vasomotor disorder.

Book Notices

War Stress and Neurotic Illness. By Abram Kardiner, M.D., Assistant Clinical Professor of Psychiatry, Columbia University, New York City. With the collaboration of Herbert Spiegel, M.D. Second edition of The Traumatic Neuroses of War. Cloth. Price, $4.50. Pp. 428. Paul B. Hoeber, Inc., 49 E. 33d St., New York 16, 1947.

This book is a restatement of Kardiner's earlier contribution to the study of traumatic neuroses originally entitled "The Traumatic Neuroses of War." The present edition contains an additional section concerning the acute phase of the war neuroses, written in collaboration with Herbert Spiegel. This section is an adequate, if incomplete, description of the emotional setting and of the psychologic and morale factors significant in the development of the war neuroses. There is no particularly new systematic approach in this part of the book; but, since it is based on the writer's own experiences in battle, it produces an authentic and vivid impact on the reader.

The greater part of the book is devoted to the study of the chronic phase of the war neuroses. Kardiner makes much of the difference between the acute and the chronic phases. He adopts the rather unusual position that the acute phase of the illness can be understood only in the light of a thoroughgoing study of the chronic phase seen years after the onset of the illness. This is a rather unique criterion for the intelligible study of the disease process. The matter is usually considered to be quite the reverse. However, Kardiner has some notable contributions to make on the subject of psychopathology which he has elicited from the analysis of the chronic traumatic neuroses. His conceptual system is too unusual to be discussed briefly here. He prefers to substitute for the usual concepts of instinct and drive the "operation" concept of "action systems."

The action system concept represents a definite theoretical advantage from the point of view of studying the integrative mechanisms of the ego. However, the discussion is marred by Kardiner's insistence on a fundamental distinction between the traumatic neuroses and the transference neuroses. Such a sharp distinction cannot be maintained either on theoretical grounds or on the basis of Kardiner's actual clinical data. The effort to cling to this distinction gives the whole work a contentious, doctrinaire aspect which undermines the real value of the basic contribution. The work should actually be studied from the point of view of the application of the novel concepts set forth to our understanding of both the transference aspects and the traumatic aspects of all neuroses. From this point of view the book has great value in spite of its singular narrowness and incompleteness as a study of the neuroses of war.

Nutrition in Industry. International Labour Office, Studies and Reports, New Series No. 4. Boards. Price, $1.50; 6s. Pp. 177, with illustrations. International Labour Office, Washington Branch, 734 Jackson Place, N.W., Washington 6, D. C.; 3450 Drummond St., Montreal 25, 1946.

This is largely devoted to the activities and findings of government wartime feeding programs of Canada, the United States and Great Britain. The accounts reveal that industrial feeding programs, while not entirely new, were not adequate to meet properly the emergency occasioned by the war. One can say that each of the three governments found it necessary to overcome a weakness in national feeding. Consequently an international effort was made to influence the diets and eating habits of the vast numbers of workers required to produce the goods and munitions of war.

The publication contains a wealth of material on various governmental procedures, both general and special in nature, utilized in the three countries. It is enhanced with a number of photographs, charts and statistical data. Each of the three separate countries is given a definite section of the book. Part I is entitled "Nutrition in Canadian Industry," part II "The Wartime Food and Nutrition Program for Industrial Workers in the United States" and part III "Industrial Canteens in Great Britain." A brief introduction has been prepared by Dr. Frank G. Boudreau, executive director, Milbank Memorial Fund, chairman, Food and Nutrition Board, and chairman, Committee on the Nutrition of Industrial Workers of the National Research Council. A table of contents also forms a part of this publication. There is no complete index of the book.

Each of the three separate sections contains a brief outline in which the separate contributors not only sum up the results of the wartime feeding program but also speculate regarding the lasting benefits to be achieved as a result of communal feeding, which was so highly developed in the great wartime plants and factories. The general opinion seems to be that a peacetime nutrition program effectively performing the functions as indicated in this report could greatly improve the health of the workers. However, it is pointed out that besides efficiently operated installations there are other problems of a social and economic nature closely interwoven with the whole problem of nutrition which must be solved by the proper agencies before malnutrition will disappear as a problem of major international concern.

White Caps: The Story of Nursing. By Victor Robinson, M.D., Professor of History of Medecine, Temple University School of Medicine, Philadelphia. Cloth. Price, $3.75. Pp. 425, with 24 illustrations. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia 5, 1946.

This history of nursing is written in such a manner that it immediately catches the reader's interest. The frailties of human nature are not glossed over. The good and the bad are recorded. The reader, however, emerges at the completion of the volume with a picture of the profession developed through an acquaintanceship with the personalities of a considerable number of the builders of the profession. The struggle to build this profession is described as long and hard and intimately tied up with the history of woman. The story of the development of modern nursing from its beginnings in the training school for nurses at Saint Thomas's Hospital in London is told in a colorful and lucid manner. Although at first this volume may appear too long and detailed for use as a textbook in nursing schools, the respect which it creates for a growing profession, and the devotion to the service of mankind which it so ably portrays, should commend it. The final section, entitled "March of the Nurses," provides a chronological table of events and biographies which serves to reemphasize and relate in concise form the main landmarks of nursing history.

Gynecology and Obstetrical Pathology with Clinical and Endocrine Relations. By Emil Novak, A.B., M.D., D.Sc., Associate in Gynecology, The Johns Hopkins Medical School, Baltimore. Second edition. Cloth. Price, $7.50. Pp. 570, with 542 illustrations. W. B. Saunders Co., W. Washington Square, Philadelphia 5, 1947.

The second edition of this excellent book is indeed welcome at this time. The introduction of the first edition provided students and practitioners with an authoritative textbook on gynecologic and obstetric pathology which has had wide acclaim. The author has worked and taught in this special field throughout his professional career. His wide experience and the abundance of material available in his laboratory are manifested in the contents of this volume. Furthermore, he has the rare ability of telling his story in simple, concise and clear language, which adds considerably to the value of this textbook. The present edition has more than a hundred new illustrations, many colored, which add much to the descriptions. The text and references have been brought up to date. This edition, like its predecessor, can be recommended to students and practitioners interested in gynecologic and obstetric pathology.

Dynamische Reaktionspathologie: Die Überwindung der medizinischen Grundlagenkrise durch die moderne Physik und Biologie, Entwicklung und Ziele einer eigengesetzlichen Medizin und ihre Auswirkung in Forschung, Praxis und Gesundheitspflege. Von K. v. Neergaard, Professor an der Universität Zürich, Zürich. Cloth. Price, 24 Swiss francs. Pp. 317, with 26 illustrations. Benno Schwabe & Co., Klosterberg 27, Basel 10, 1946.

"The real crisis is a struggle for a new conception of science." Medicine cannot stand on the basis of classic natural science any longer without becoming scholastic. Modern physics has fundamentally changed the old forms of thinking. Under the influence of classic science the conception of substance combined with the three dimensional conception of space leads to the question of the site of disease. Now we have a space-time unity, a four dimensional image of the world. According to the gestalt theory it is hopeless to try to understand the whole by way of the analysis of its elements. Physics and chemistry are sciences of the elements: the problem of biology is the whole system. Holism teaches that the processes of life cannot be understood

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Pelvic Neurinomas: Interesting Case. O. Heinivaara.—p. 17.
*Contribution to Study of the So-Called Glomus Tumors. L. Löfgren. —p. 25.
Results of Treatment of Carcinoma of Corpus Uteri in Woman's Clinic in Helsinki During Years from 1931 to 1946. V. Turtola.—p. 47.
Subcutaneous Injuries of Pancreas. V. Taivainen.—p. 63.

Glomus Tumors.—Löfgren says that, although the literature on glomus tumors has somewhat increased, this type of tumor is not sufficiently known. The earlier literature had applied various terms to the tumor, but Masson in 1924 showed that it arises from the "neuromyoarterial glomera"; hence the term glomus tumor. Reviews of cases collected from the literature indicate that the sex distribution is about equal. Localization under the nail and other digital locations is seen almost exclusively in female patients, whereas localization to other parts of the extremities is more usual in males. Glomus tumors occur in patients of all ages and usually appear singly. They develop slowly and are rarely larger than a pea. They are mostly small, bluish, elastic, extremely tender tumors. The slightest pressure from clothing may cause intense pain. Surgery is the only effective treatment. The author reports 3 cases of glomus tumor, in 2 of which the tumor was located on the lip; in the third it was on the finger.

Nordisk Medicin, Gothenburg

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Serum Proteins in Old Persons. J. Bock.—p. 715.

Hygiea

Scarification Treatment. G. Biörck, O. Göhle and C. Westman.—p. 739.
Ileus in Pregnancy. E. von Post.—p. 744.
*Cramps and Restless Legs in Acute Poliomyelitis. R. Luft and Ragnar Müller.—p. 748.

Cramps and Restless Legs in Acute Poliomyelitis.—Luft and Müller state that cramps in acute poliomyelitis seem not to have been previously reported in the literature. Of 32 patients (22 observed for one to two years, 10 for ten to twelve years) 15 had cramps localized in muscles affected during the acute stage of the disease. The occurrence of the cramps does not seem to depend on the degree of injury of the peripheral motor neuron. There is no relationship between the degree of paresis and the frequency and intensity of the cramps, which in most of the cases reported were constant during the time of observation. When cramps are especially troublesome, quinine gives good results. Of 18 patients in whom one or both legs were affected during the acute stage 3 (2 observed for ten years, 1 for one year) had restless legs with paresthesia usually in the lower part of the leg, sometimes in the thigh. Restless legs are ascribed to a vasomotor disorder.

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Book Notices

War Stress and Neurotic Illness. By Abram Kardiner, M.D., Assistant Clinical Professor of Psychiatry, Columbia University, New York City. With the collaboration of Herbert Spiegel, M.D. Second edition of The Traumatic Neuroses of War. Cloth. Price, $4.50. Pp. 428. Paul B. Hoeber, Inc., 49 E. 33d St., New York 16, 1947.

This book is a restatement of Kardiner's earlier contribution to the study of traumatic neuroses originally entitled "The Traumatic Neuroses of War." The present edition contains an additional section concerning the acute phase of the war neuroses, written in collaboration with Herbert Spiegel. This section is an adequate, if incomplete, description of the emotional setting and of the psychologic and morale factors significant in the development of the war neuroses. There is no particularly new systematic approach in this part of the book; but, since it is based on the writer's own experiences in battle, it produces an authentic and vivid impact on the reader.

The greater part of the book is devoted to the study of the chronic phase of the war neuroses. Kardiner makes much of the difference between the acute and the chronic phases. He adopts the rather unusual position that the acute phase of the illness can be understood only in the light of a thoroughgoing study of the chronic phase seen years after the onset of the illness. This is a rather unique criterion for the intelligible study of the disease process. The matter is usually considered to be quite the reverse. However, Kardiner has some notable contributions to make on the subject of psychopathology which he has elicited from the analysis of the chronic traumatic neuroses. His conceptual system is too unusual to be discussed briefly here. He prefers to substitute for the usual concepts of instinct and drive the "operation" concept of "action systems."

The action system concept represents a definite theoretical advantage from the point of view of studying the integrative mechanisms of the ego. However, the discussion is marred by Kardiner's insistence on a fundamental distinction between the traumatic neuroses and the transference neuroses. Such a sharp distinction cannot be maintained either on theoretical grounds or on the basis of Kardiner's actual clinical data. The effort to cling to this distinction gives the whole work a contentious, doctrinaire aspect which undermines the real value of the basic contribution. The work should actually be studied from the point of view of the application of the novel concepts set forth to our understanding of both the transference aspects and the traumatic aspects of all neuroses. From this point of view the book has great value in spite of its singular narrowness and incompleteness as a study of the neuroses of war.

Nutrition in Industry. International Labour Office, Studies and Reports, New Series No. 4, Boards. Price, $1.50; 6s. Pp. 177, with illustrations. International Labour Office, Washington Branch, 734 Jackson Place, N.W., Washington 6, D. C.; 3450 Drummond St., Montreal 25, 1946.

This is largely devoted to the activities and findings of government wartime feeding programs of Canada, the United States and Great Britain. The accounts reveal that industrial feeding programs, while not entirely new, were not adequate to meet properly the emergency occasioned by the war. One can say that each of the three governments found it necessary to overcome a weakness in national feeding. Consequently an international effort was made to influence the diets and eating habits of the vast numbers of workers required to produce the goods and munitions of war.

The publication contains a wealth of material on various governmental procedures, both general and special in nature, utilized in the three countries. It is enhanced with a number of photographs, charts and statistical data. Each of the three separate countries is given a definite section of the book. Part I is entitled "Nutrition in Canadian Industry," part II "The Wartime Food and Nutrition Program for Industrial Workers in the United States" and part III "Industrial Canteens in Great Britain." A brief introduction has been prepared by Dr. Frank G. Boudreau, executive director, Milbank Memorial Fund, chairman, Food and Nutrition Board, and chairman, Committee on the Nutrition of Industrial Workers of the National Research Council. A table of contents also forms a part of this publication. There is no complete index of the book.

Each of the three separate sections contains a brief outline in which the separate contributors not only sum up the results of the wartime feeding program but also speculate regarding the lasting benefits to be achieved as a result of communal feeding, which was so highly developed in the great wartime plants and factories. The general opinion seems to be that a peacetime nutrition program effectively performing the functions as indicated in this report could greatly improve the health of the workers. However, it is pointed out that besides efficiently operated installations there are other problems of a social and economic nature closely interwoven with the whole problem of nutrition which must be solved by the proper agencies before malnutrition will disappear as a problem of major international concern.

White Caps: The Story of Nursing. By Victor Robinson, M.D., Professor of History of Medecine, Temple University School of Medicine, Philadelphia. Cloth. Price, $3.75. Pp. 425, with 24 illustrations. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia 5, 1946.

This history of nursing is written in such a manner that it immediately catches the reader's interest. The frailties of human nature are not glossed over. The good and the bad are recorded. The reader, however, emerges at the completion of the volume with a picture of the profession developed through an acquaintanceship with the personalities of a considerable number of the builders of the profession. The struggle to build this profession is described as long and hard and intimately tied up with the history of woman. The story of the development of modern nursing from its beginnings in the training school for nurses at Saint Thomas's Hospital in London is told in a colorful and lucid manner. Although at first this volume may appear too long and detailed for use as a textbook in nursing schools, the respect which it creates for a growing profession, and the devotion to the service of mankind which it so ably portrays, should commend it. The final section, entitled "March of the Nurses," provides a chronological table of events and biographies which serves to reemphasize and relate in concise form the main landmarks of nursing history.

Gynecology and Obstetrical Pathology with Clinical and Endocrine Relations. By Emil Novak, A.B., M.D., D.Sc., Associate in Gynecology, The Johns Hopkins Medical School, Baltimore. Second edition. Cloth. Price, $7.50. Pp. 570, with 542 illustrations. W. B. Saunders Co., W. Washington Square, Philadelphia 5, 1947.

The second edition of this excellent book is indeed welcome at this time. The introduction of the first edition provided students and practitioners with an authoritative textbook on gynecologic and obstetric pathology which has had wide acclaim. The author has worked and taught in this special field throughout his professional career. His wide experience and the abundance of material available in his laboratory are manifested in the contents of this volume. Furthermore, he has the rare ability of telling his story in simple, concise and clear language, which adds considerably to the value of this textbook. The present edition has more than a hundred new illustrations, many colored, which add much to the descriptions. The text and references have been brought up to date. This edition, like its predecessor, can be recommended to students and practitioners interested in gynecologic and obstetric pathology.

Dynamische Reaktionspathologie: Die Überwindung der medizinischen Grundlagenkrise durch die moderne Physik und Biologie, Entwicklung und Ziele einer eigengesetzlichen Medizin und ihre Auswirkung in Forschung, Praxis und Gesundheitspflege. Von K. v. Neergaard, Professor an der Universität Zürich, Zürich. Cloth. Price, 24 Swiss francs. Pp. 317, with 26 illustrations. Benno Schwabe & Co., Klosterberg 27, Basel 10, 1946.

"The real crisis is a struggle for a new conception of science." Medicine cannot stand on the basis of classic natural science any longer without becoming scholastic. Modern physics has fundamentally changed the old forms of thinking. Under the influence of classic science the conception of substance combined with the three dimensional conception of space leads to the question of the site of disease. Now we have a space-time unity, a four dimensional image of the world. According to the gestalt theory it is hopeless to try to understand the whole by way of the analysis of its elements. Physics and chemistry are sciences of the elements: the problem of biology is the whole system. Holism teaches that the processes of life cannot be understood

from the mechanistic, physicochemical side, i. e. from the next lower phase. The whole is logically superior to its members.

Much more important than the morphologic form is the functional side, the dynamic equilibrium between the whole and its parts. Pathologic processes cannot be explained by disturbed normal physiology; something new occurs, the pathologic reaction. The readiness for a reaction is what matters most. The same factors may produce quite different pathologic conditions. These new facts cannot be understood from physiology or normal anatomy. This is decisive for the position of medicine as an independent field of research.

Modern milieu biology is interested in the active reaction to outside influences of the organism and does not see the organism as isolated from the milieu. It leads to medical sociology; a community is more than and quite different from a sum of individuals. Here too we see a gestalt-like structure. Diagnosis must be developed into a diagnosis of reactions. This is the basis of active treatment, which mobilizes the defensive powers of the organism. Healing is not directed to passive developments only but to active processes also. The laws of pathology are more general than those of physiology. This is expressed by the name "autonomic medicine." The understanding of the disease as a historical process is best expressed by the term "dynamic reaction pathology."

This is a summary and necessarily incomplete review of a book which is full of interesting ideas and stimulates the reader to think over the problems which medicine faces in our days. However, its somewhat alarming title is not fully justified. For decades we have heard about the "crisis" of modern medicine, and more than one book has been written in order to avoid or overcome it. In the meantime we have seen a progressive development in medical thought and practice, which can hardly be much promoted by programmatic declarations even though these are based on a profound knowledge of medicine, science and history such as the writer of this book possesses. In medicine more than in most other sciences progress can, at least to a great part, be measured by practical results.

Eye Surgery. By H. B. Stallard, M.B.E., M.D., F.R.C.S., Assistant Eye Surgeon, St. Bartholomew's Hospital, London. Cloth. Price, $11. Pp. 444, with 338 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 28 Orchard St., Bristol 1, England, 1946.

This book was written and illustrated by the author himself, without access to ophthalmic literature, while at sea, in military transports and in army camps. It is not a rehash of the often conflicting views of many authorities, but the reader is given the results of one man's observations and the methods he has used to cope with the many and manifold surgical problems presented by the eye and its adnexa. The author is a man of wide experience both in civil and in military fields, and his theories and results are related in this volume.

The introductory chapter contains useful instructions for the ophthalmic surgeon and his assistant and also deals with a description of layout and care of instruments, and preoperative and postoperative care of patients. A chapter on anesthesia and analgesia follows and then some 130 pages concerned mainly with plastic surgery of the eyelids. Reconstructive surgery for war injuries is covered in considerable detail. The remaining chapters of the book deal with the lacrimal apparatus, the extraocular muscles, the conjunctiva, cornea, anterior chamber and sclera, the iris, the lens, glaucoma, the retina, choroid and vitreous, traumatic surgery and the orbit. Each operation is preceded by a list of the instruments required and an account of the method employed for producing anesthesia or analgesia. This entails considerable repetition and contains only those operations which the author himself favors and practices. Some original matter consists of a description of the author's methods of extraction of intraocular foreign bodies by the posterior route, of implantation of radon seeds far back on the eye for intraocular neoplasm and his corneoscleral stitch in cataract operation. The chapter on the orbit contains much useful information, and an excellent description of a modified Kronlein operation.

The book is characterized by a lucidity of description, attention to detail and incorporation of valuable material not previously obtainable in book form. The reader, given reasonable experience in ophthalmic surgery, should be able to perform any of the operations described even if he has not had the opportunity to see them done by others. The work can be considered an authoritative English book on ophthalmic surgery and should be of considerable value to American ophthalmologists.

Pain in the Distribution-Area of the 4:th Lumbar Root: A Study of Pain Interpreted as Referred Pain and as Caused by Direct Irritation of the Nerve-Root. By Gösta von Reis. Acta psychiatrica et neurologica, Supplementum XXXVI. Paper. Pp. 135, with 30 illustrations. Stockholm, 1945

Pain within the area of the fourth lumbar root has been studied and interpreted partly as referred pain (in arthrosis deformans coxae) and partly as caused by direct disorder of the root (in disk herniation and osteoarthritic disorders in the spine). In 6 cases with pain similar to arthrosis deformans coxae the question of the cause of pain is undetermined.

Analyses of muscle tenderness, spontaneous pain and experimental irritation together with experimental anesthetizing of hip joints indicate that the pain in arthrosis deformans coxae can be interpreted as referred pain within, chiefly the area of the fourth lumbar root.

Rhizotomy of the fourth lumbar root in pain interpreted as referred pain within chiefly the distribution area of this root gave relief from pain in 12 of 14 cases. The pain is prone to recur. After an observation period of fourteen months there were satisfactory results in 6 of 14 operative cases.

Rhizotomy of the fourth lumbar root in cases with pain within the distribution area of this root gave, in 6 cases of pain of doubtful origin, freedom from pain in 4 cases during an observation period of respectively sixteen, twenty-two, twenty-four and twenty-four months. In a further case there was, after an observation period of twenty-three months, a result which was satisfactory from a practical point of view.

Section of the third and fourth lumbar sensory roots in conditions of pain caused by arthrosis deformans coxae resulted in a satisfactory condition in 9 of 18 operative cases after an observation period of nine months.

Sources of error in rhizotomy are discussed.

In about half of the number of cases with pain caused by arthrosis deformans coxae there existed a depression of the patellar reflex or the achilles reflex or both. Observations after sectioning the root speak in favor of the afferent impulses of the patellar reflex traveling via the third and fourth lumbar sensory roots. In about half of the cases conduction travels via the fourth lumbar sensory root alone.

After section of the fourth lumbar root, a diminution of the superficial sensitivity to pain is considered the rule (7 cases of 10). Section of the third and fourth lumbar sensory roots produced in all the cases (18) a diminution of the superficial sensitivity to pain.

The lumbar core dermatome of the superficial sensitivity to pain has been studied after eighteen sections of the fourth lumbar root. The area of diminution of the superficial sensitivity to pain has been considered characteristic of the core dermatome of the fourth lumbar root and has been compared with previously mentioned dermatomes associated with the fourth lumbar root.

A History of Nursing. By Gladys Sellew, Ph.D., R.N., Director, Department of Nursing, The College of St. Catherine, St. Paul, Minn., and C. J. Nuesse, Ph.D. Fabrikold. Price, $3.75. Pp. 444 with illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1946.

This textbook is a well organized and presented history of nursing. A sincere attempt has been made to correlate the development of nursing throughout the ages with the development of mankind and his consciousness of health and disease. Each chapter is carefully subtitled and is completed by study questions and a suggested reading list. The volume provides a considerable amount of medical and sociologic background related to each period of nursing history. The style and type of organization of the book are similar to those of many high school textbooks. However, there is a wealth of material which is readily available to the more mature student.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EFFECT OF AMPUTATION OF THE CERVIX ON CONDUCT OF LABOR

To the Editor:—Information is requested concerning the conduct of labor following Sturmdorf's operation on the cervix. Please cite data bearing on uterine rupture, premature delivery and the need for cesarean section, if any.

M.D., Texas.

ANSWER.—Contrary to former ideas, Danforth has pointed out that the cervix is largely fibrous tissue containing few muscle cells. Partial removal of this structure need not interfere with the normal labor mechanism. If a portion of the cervix remains and there is little scar tissue present the cervix may undergo normal effacement and dilatation. However, when the cervical amputation has been sufficiently complete so that no vaginal portion is present, labor is less likely to pursue a normal course. Furthermore, premature delivery is a fairly common occurrence following high cervical amputation.

The conduct of labor in a patient who has had an operation on the cervix should be conservative but the prognosis guarded. In the absence of any other contraindication to delivery through the pelvis the patient should be allowed to go into labor and the course followed intelligently. If effacement and dilatation proceed normally, delivery from below can be expected. On the other hand, if after a good test of labor the cervix fails to dilate normally, cesarean section should be considered. Previous plastic surgery for the correction of cystocele and rectocele in addition to cervical amputation should be considered sufficient indication for an elective cesarean section. Spontaneous rupture of the uterus is a rare sequela following surgery of the cervix.

BLOOD SEDIMENTATION RATE IN SYPHILIS

To the Editor:—Will you kindly tell me the effect of syphilis in its different stages on the erythrocyte sedimentation rate?

Victor F. Woolf, M.D., New York.

ANSWER.—The erythrocyte sedimentation rate is a nonspecific reaction comparable to the body temperature and leukocyte count in that it gives information of a general character. In syphilis, as in certain other chronic infections, it is a gross measure of the extent and activity of the morbid process. The sedimentation rate may be increased in primary syphilis even before the blood serologic test becomes positive. The highest readings occur in association with florid secondary manifestations. In late syphilis erythrocyte sedimentation is rarely increased in the absence of overt clinical lesions. Following antisyphilitic therapy the sedimentation rate falls and is normal in patients who have been adequately treated.

The sedimentation rate does not have diagnostic value in syphilis except as it may call attention to a more or less occult clinical condition. In following the course of syphilitic infection and assessing the response to antisyphilitic therapy, the quantitative serologic test is a specific and far more reliable index of clinical activity.

PROTRUDED INTERVERTEBRAL DISK AND PREGNANCY

To the Editor:—A white woman aged 27 developed a severe unilateral sciatica after delivery of her second baby. This was believed due to a partially ruptured intervertebral disk and spontaneous recovery occurred about a year and a half after the delivery. What is the probability of recurrence of a similar episode with another pregnancy? What preventive measures might be taken?

Herbert G. Barber, M.D., Sells, Ariz.

ANSWER.—If the labor was not extremely difficult and forceps were not used, the sciatica is probably the result of a partially ruptured intervertebral disk. If, in the future, labors are not difficult there is less probability of the recurrence of symptoms. One of the characteristics of protruded intervertebral disk is the intermittence of symptoms.

The preventive measures to be taken are (1) avoidance of stooping, lifting or straining, (2) wearing of a lumbosacral support and a good maternity corset during pregnancy and (3) removal of the disk.

EFFECT OF LOW TEMPERATURES ON REACTIONS OF BLOOD

To the Editor:—In view of the difficulty in heating our buildings, I have been concerned about certain reactions that have connected themselves in my mind with low temperatures. I should like to have an explanation and advice with reference to them. 1. The coagulation time of the blood is reported as 10 minutes by one laboratory and 20 minutes (at temperature at 11 C.) by another laboratory. The first laboratory insists that 10 minutes normal for the conditions of temperature under which the test was made. 2. Prolonged bleeding time has been observed in that bleeding did not cease from the lobe of the ear, where a prick had been made for hemoglobin estimation, for a period of fifteen minutes, which, in the instance in view, coincided with the time it took the patient to get to a properly warmed room. 3. When the blood was centrifuged with view to separating the serum for a Kahn test, the serum solidified. (The temperature was not freezing.) 4. In giving a transfusion in a room which was inadequately heated, the citrated blood clotted and could not be transfused. Was this due to suppressed chemical ionization and reaction with the sodium citrate? Can this be forestalled in the absence of heating facilities? 5. Can blood typing and blood matching under these conditions of temperature be considered reliable? 6. Are there changes in the composition of the blood of sufficient moment to account for any of the phenomena mentioned on the basis of the individuals concerned living in a constantly cold temperature?

M.D., China.

ANSWER.—The inquiry regarding the effect of temperatures on coagulation of blood is most interesting. However, there is not enough information regarding the procedures that were followed. With the insufficient data specific conclusions cannot be ventured nor can anything but general advice be offered.

1. The coagulation time of blood is normally increased with temperature lower than that usually considered as normal room temperature. At a temperature of 11 C. the coagulation time determined by the Lee and White method could easily be as much as twenty minutes. It is assumed that a test tube method with properly cleaned glassware is the one under consideration. It would be advisable, if at all possible, to carry out coagulation tests in a water bath at 37 C. immediately after withdrawal of the blood and placing it in a tube which should be previously warmed to 37 C.

2. Bleeding time is prolonged in cold temperatures paralleling the coagulation time. If it is not possible to carry the test out in a warm room, the standard time should be determined under the conditions of the test.

3. Blood for a Kahn test should be given a preliminary prolonged centrifugation and then further centrifugation after separation of the clot from the side of the tube. In other words, all fibrin should be formed from the fibrinogen before an attempt is made to remove the serum. In fact, if the tubes were allowed to stand until the retraction of the clot is complete, the serum would be more suitable for serologic procedures.

4. The data given are insufficient to explain the clotting of the citrated blood. This should not occur if proper mixture with the anticoagulant is carried out.

5. Blood typing and blood mixing should be reliable under the conditions of temperature mentioned. In fact they may be more reliable than at higher temperatures. However, there may be considerable difficulty in misleading results due to "cold agglutinins." Here again it would be advisable to use some sort of water bath, maintained at 37 C., to clarify any confusion that might be caused by abnormal agglutinins.

6. It is not possible to answer this question. It could be a subject for real clinical investigation, but most careful controls would be required before any conclusions could be drawn.

SPONTANEOUS CURE OF SYPHILIS

To the Editor:—What percentage of people contracting syphilis become spontaneously cured without any treatment? Have there been any well controlled studies on this question?

Dean C. Austin, M.D., Brookings, S. D.

ANSWER.—The only first class study which deals with the spontaneous curability of syphilis is that of Bruusgaard, E.: Ueber das Schicksal der nicht spezifisch behandelten Luetiker, *Arch. f. dermat. u. syph.* **157**:309, 1929. This article has been further analyzed from the biostatistical point of view by Sowder, W. T.: Interpretation of Bruusgaard's Paper on the Fate of Untreated Syphilis, *Am. J. Syph., Gonor. & Ven. Dis.* **24**:684 (Nov.) 1940. A still further discussion of the matter may be found in chapter III, on the prognosis of syphilis, in the monograph by Moore, J. E.: The Modern Treatment of Syphilis, ed. 2, Springfield, Ill., C. C Thomas.

The available evidence suggests that about 25 per cent of persons contracting syphilis become spontaneously cured without any treatment and that another 25 per cent achieve complete latency (though remaining seropositive in the blood), living to a ripe old age and dying of something else.

COURSE AND FUNCTIONS OF SYMPATHETIC NERVE FIBERS AROUND HEART AND LARGE BLOOD VESSELS

To the Editor:—I am a general practitioner with a country practice, and only a meager portion of the medical literature is available to me for reference. I have a particular reason for being interested in obtaining the best information available in regard to any autonomic supply that might originate from the aortic plexus and/or the cardiac plexus and accompany the innominate, the left common carotid and left subclavian arteries as they leave the aorta. I think it is established that both vertebral arteries have a large autonomic accompaniment the origin of which is from the lower cervical and upper thoracic sympathetic ganglions, and of course the carotids high in the neck are joined by, and accompanied upward, by a large autonomic supply from the superior cervical ganglions. The thought has occurred to me that autonomic fibers from the larger plexuses of the aorta and possibly of the heart might accompany the vessels first mentioned at their origin from the aorta. I have tried to ascertain the truth or fallacy of this deduction by referring to the literature available to me without success.

D. C. Simmons, M.D., Kilgore, Texas.

ANSWER.—All the great vessels arising from the aortic arch are accompanied with vasomotor fibers of the sympathetic component of the autonomic nervous system. Such fibers form plexuses which invest the subclavian, carotid, vertebral and internal mammary arteries as well as the thyrocervical and the costocervical trunks.

Funotionally these periarterial plexuses are primarily concerned with control of vascular tonus and therefore of the diameter of major arteries and their branches. Some fibers innervate glands and smooth muscle in the skin. The subclavian plexus of sympathetic fibers, for instance, continues along the axillary and brachial arteries and through their terminal branches may extend to the skin of the superior extremity (to arrector pili muscles and to sweat glands). The sympathetic fibers accompanying the thyrocervical trunk extend to the thyroid gland along the inferior thyroid artery.

Most of the sympathetic fibers that form the periarterial plexuses in question are of the postganglionic, unmyelinated type. They originate mainly in the inferior cervical ganglion or, if the latter is fused with the first thoracic sympathetic ganglion, in the stellate ganglion.

There is no evidence that any of these plexuses are functionally dependent on the cardiac or on the aortic plexus of thoracic levels. The two cardiac plexuses (superficial and deep) are terminal for the heart and the lungs through their extensions along the coronary and the pulmonary arteries. The periaortic plexus in the thorax is less extensive than that of the abdominal aorta. There are no large, unpaired visceral arteries coming off the thoracic descending aorta. The visceral outflow of the thoracic sympathetic trunks, therefore, streams less into a thoracic periaortic plexus than into the splanchnic nerves that pierce the diaphragm and supply the celiac plexus.

Vasomotor fibers of the periarterial plexuses (subclavian, internal mammary and so on) are by no means the sole source of sympathetic innervation of the superior extremity or of thoracic skin. Many postganglionic, unmyelinated fibers reach these regions through gray communicating rami from the lower cervical and upper thoracic sympathetic trunks. These gray rami connect the sympathetic trunks with the roots of the brachial plexus and with thoracic spinal (intercostal) nerves. A great deal of visceral efferent, sympathetic outflow, therefore, occurs through the respective spinal nerves by an admixture of unmyelinated fibers. They follow mainly the distribution of sensory nerves and thereby reach the vessels of the subcutis and the skin. There is evidence that recovery from fatigue of striated muscle is also influenced by sympathetic stimuli.

Some reports indicate that periarterial sympathectomy produces only temporary vascular symptoms followed by normal vascular tonus. The dual course and supply of sympathetic fibers to the arm would explain such results.

THE ODOR FROM ILEOSTOMIES

To the Editor:—A patient of mine who carries a permanent ileostomy complains of persistent and disagreeable odors. Is there any medication that would help me eliminate this condition?

Charles M. Robbins, M.D., Newark, N .J.

ANSWER.—Many patients complain a great deal about the malodor from colostomies and ileostomies. The administration of charcoal frequently is sufficient to decrease the odor. This acts simply as an absorbent and should be administered in doses sufficient to control the odor. Another substance which is of value is kerol 3 minims (0.18 cc.) administered in a capsule once daily before breakfast.

PAIN IN RIGHT UPPER ARM

To the Editor:—Information is requested to assist in alleviating pain located deep in the right upper arm at the level of the insertion of the deltoid muscle. The patient is a white woman aged 27 with a history of direct trauma to the right arm three years ago. There have been intermittent deep seated pains lasting a day or two during this time. Since December 1946, however, the pain has been almost constant and aggravated by motion. X-rays of the shoulder, humerus and elbow are completely normal. Diathermy, infra-red and other methods of physical therapy such as massage have likewise been of no help. Moderately large doses of B complex were administered parenterally without effect. Aspirin compound with and without codeine have not eased the distress. The patient states that the pain feels as though it was within the bone itself. I have felt that this was largely a psychosomatic problem but I am writing to see if this may not represent some syndrome.

M.D., Connecticut.

ANSWER.—This patient probably has one of four conditions: (1) calcified deltoid bursa, (2) neuritis of the axillary nerve. (3) brachial neuritis, (4) functional nervous disorder. It is suggested that a complete neurologic examination be made to rule out these conditions. If objective evidence of organic disease is not found the patient should have a psychiatric examination.

DETERMINATION OF PROTHROMBIN TIME

To the Editor:—Has any work been done on the duration of prothrombin time studies on plasma? That is, for how long a time can plasma prothrombin time studies be delayed and yet be reliable? Will plasma prothrombin time be reliable if done after one or two days from the time of the drawing of the plasma?

Harry W. Orris, M.D., Bronx, N. Y.

ANSWER.—For an accurate determination of prothrombin time, the test should be done within three or four hours after the blood is drawn. In twenty-four hours the prothrombin activity is often reduced 50 per cent even when the blood is stored in a refrigerator. The loss of prothrombin activity according to A. J. Quick (On the Constitution of Prothrombin, *Am. J. Physiol.* **140**:212 [Nov.] 1943) is due to a destruction of component A of prothrombin by oxidation. This can be minimized by keeping the blood cold and covering it with a layer of liquid petrolatum.

ANORCHIDISM

To the Editor:—While operating for a right undescended testis, I was unable to find either the testis or any of its appendages. The retroperitoneal area up to the kidney and medially into the rectovesical septum was explored without finding any testis. There was no evidence of any spermatic vessels. Is it possible that the patient was born with only one testis, the left, which was of a size greater than would be expected in a 13 year old boy? Or was the testis present but in some ectopic position eluding exposure?

M.D., New York.

ANSWER.—From the evidence submitted it would appear the patient has only one testis. This is especially likely since the retroperitoneal area up to the kidney and medially into the rectovesical septum was explored. This condition is known as anorchidism, which at one time was considered rare but which recent observations prove to be not infrequent.

TENDENCY TO CONGENITAL MALFORMATIONS

To the Editor:—A married woman aged 26 was recently delivered of her second child within a fourteen months period. Each infant lived approximately thirty-six hours and died of a congenital heart defect (proved by necropsy). The first pregnancy was accompanied with a moderate amount of nausea and vomiting, the second with much less. Each pregnancy was essentially normal, although each child was carried beyond the estimated date of delivery (one month and two weeks respectively). All laboratory studies were normal (blood count, urinalysis), blood Wassermann negative and Rh factor positive. The patient took antepartum medication of small doses of thyroid, iron, calcium and vitamin D. The questions brought up by the patient are what are the chances of having a normal baby? Can there be any kind of chemical or other incompatibility between the tissues of the wife and the tissues of the husband, and if so, how can it be determined? The family history is negative for any kind of abnormality on either side. The patient will soon try a third pregnancy unless a definite contraindication or likelihood of a poor prognosis exists.

M.D., Pennsylvania.

ANSWER.—Statistically there is an increased hazard for a patient like this to give birth to another baby with some gross malformation. However, the hazard is not sufficiently great to advise against future pregnancies. It is entirely possible that future children will be normal.

There is no scientific evidence that chemical or other incompatibilities between husband and wife exist.

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